DOCUMENT RESUME

ED 209 426 CE 029 948

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TITLE	Performance Objectives, Task Analysis, Learning Content, Content Limits, and Domain Referenced Tests for the Agricultural Chemicals Catalog. Final Report.
INSTITUTION	Indiana State Board of Vocational and Technical Education, Indianapolis.; Purdue Univ., Lafayette, Ind.
PUB DATE	Dec 80
NOTE	704p.
EDRS PRICE	MF04/PC29 Plus Postage.
DESCRIPTORS	*Agricultural Education; *Agricultural Occupations; Agricultural Supplies; Agricultural Supply Occupations; Behavioral Objectives; Competency Based Education; *Course Content; Curriculum Guides; Equipment Maintenance; Feed Industry; Fertilizers; High Schools; Instructional Materials; *Occupational Information; Pesticides; Postsecondary Education; Purchasing; Sales Occupations; Task Analysis; Tests; *Vocational Education
IDENTIFIERS	*Agricultural Chemicals

ABSTRACT

This document contains Indiana agricultural chemicals curriculum materials based on the Vocational-Technical Education Consortium of States (VTECS) Agricultural Chemicals Catalog. It is intended to improve preparation of high school and adult students for handling and using agricultural chemicals and for jobs as chemical salespersons or chemical applicators. Based on an analysis of tasks involved in agricultural chemical workers' jobs, the curriculum materials are divided into 34 domains covering the following material: disposal of chemical containers; delivery of chemicals; locating fields to be treated; managing chemical storage; writing receipts; recording accounts payable and receivable; selling agricultural chemicals; sales promotion; machinery purchase; grain grading; moisture testing grain; formulating feeding rations; applying for weighing license; chemical testing; soil samples; soil deficiencies; calculating application rates; preparing for and applying liquids and dry chemicals; inspection and maintenance of liquid equipment and dry equipment; assembling boom-type equipment; inspection and maintenance of lighting systems; changing oil and filters; cleaning filters; inspecting respirators; changing spark plugs and ignition points; and replacing impeller pump, power take-off shaft, worn bearings, and universal joints. Each domain is composed of performance objectives, guides, performance checklists, task analysis, learning content, data sheets, and domain-referenced tests covering the tasks in the domain. (KC)

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ED209426

FINAL REPORT

PERFORMANCE OBJECTIVES TASK ANALYSIS, LEARNING CONTENT, CONTENT LIMITS, AND DOMAIN REFERENCED TESTS FOR THE AGRICULTURAL CHEMICALS CATALOG

272-78-III-3

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December 1980

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CE 029 948

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Project population

Groups	Number of persons: Impacted by project	Number of persons: Conducting or giving input
students		
secondary		
postsecondary		
adult		
school personnel		
secondary	280	
postsecondary		
adult		
other		
teacher educators		
employers		
employees		
other:____________		
special needs		
disadvantaged		
handicapped		
migrant		
minority		
limited English proficiency		
other:____________		

III. Statement of the Objectives:

1. To develop Indiana Vocational Curriculum materials for the Agricultural Chemical Catalog consisting of:

   a. Performance objectives
   b. Performance guides
   c. Performance checklists where appropriate
   d. Detailed task analysis
   e. Learning content
   f. Content limits
   g. Domain referenced tests

IV. Omitted

V. Strategies/Procedures:

1. Develop learning content based on the task analysis.

2. Develop domains based on common learning content.

3. Refine learning content by domain.

4. Develop data sheets or set content limits.

5. Prepare domain referenced test planning formats, examinee instruction and where needed performance checklists for each domain in the catalog.

6. Write an introduction to the materials to aid in their curricular use.

VI. Omitted

VII. Findings

Indiana Vocational Curriculum materials were developed for each of the original 84 tasks in the agricultural chemicals catalog.

The final product, appendix A, consists of:

82 performance objectives
82 performance guides
8 performance checklists
83 task analysis
83 learning content summaries
16 Data Sheet A
34 Data Sheet B
59 DRT Planning Formats
59 DRT Examinee Instructions
42 DRT Performance Checklists

VIII. Evaluation of Project: Project evaluation is incomplete, it will need to be assessed following initial use of materials by teachers in the field.

IX. Conclusions and Recommendations.

1. It is recommended that teachers be asked to attend an inservice meeting explaining the materials before they be provided with copies.
2. It is recommended that teachers using the materials be surveyed as to their ideas for improving the materials for teacher use, both in content and method of presentation.

X. Financial Statement:

The project this product was a portion of expried some little time ago and final fiscal accounting has been made on the overall project. (This portion is delayed due to the need to complete the agricultural chemicals catalog so long delayed by the V-TECS Central Staff.)

XI. The material developed during the project appears as Appendix A.

APPENDIX A

AGRICULTURAL CHEMICALS
CURRICULUM MATERIALS

PERFORMANCE OBJECTIVES, TASK ANALYSES, LEARNING CONTENT, CONTENT LIMITS, AND DOMAIN REFERENCED TESTS FOR THE AGRICULTURAL CHEMICALS CATALOG

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INTRODUCTION

Indiana has elected to complete vocational curriculum materials using a VTECS Catalog as the data base for performance based education curriculum materials related to what workers actually do on the job.

Tasks are identified based on the importance or time spent by a job incumbent in completing the tasks. A task is defined by the six criteria noted by West[1].

These criteria are:

1. A task has a definite beginning and end.
2. A task is an inherent part of a job.
3. A task is done in a relatively short period of time.
4. A task is amenable to testing in a real life situation.
5. A task is composed of subtasks which are capable of sequencing into a terminal performance.
6. A task is the smallest bit of meaningful activity that is done for its own sake when viewed in relation to the total array of job activities performed by the job holder.

These tasks are then analyzed step by step the usual way a job incumbent completes the sequence of elements and subtasks within the job. With this guide to how the task is completed next the rules, concepts, and principles the job incumbent needs to know in order to properly perform the task are identified and summarized into learning content. Domains are established on the basis of common learning content and psychomotor skills used in task performance.

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[1] West, William. Research for Performance Based Vocational Education in Indiana, Research Dissemination Service, Vocational Education Information Services, Indiana University, 1978, p. 11.

Data sheets that identify content limits are developed for the common content (Data Sheet B) and for the content specific to each task in the domain (Data Sheet A.).

With this information the teacher can then use the Domain Referenced Test planning sheets to provide a performance test for the tasks in the domain. For example, the first student may be given variable one of X while the second completes the test with variable two of X as the criterion measure, etc.

Performance checklists are provided where process as well as product is important. Where the product alone is evaluated no checklist is needed.

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*Each Domain is composed of performance objectives, guides, performance checklists, task analysis, learning content, data sheets, and domain referenced tests covering the tasks in the domain.

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DOMAIN: DISPOSAL OF CHEMICAL CONTAINERS

TASK: Bury or Burn Chemical Containers

PERFORMANCE OBJECTIVE

Given empty chemical containers, dispose of the containers in an approved manner.

PERFORMANCE GUIDE

1. Determine class of chemical from label.
2. Determine safety procedures from label.
3. Determine type of disposal method required.
4. Locate a burn site or incinerator for burnable containers.
5. Burn containers.
6. Locate a burial site for non-burnable containers.
7. Excavate the burial site.
8. Crush or puncture containers.
9. Bury containers.
10. Clean equipment used.

TASK ANALYSIS

DOMAIN: DISPOSAL OF CHEMICAL CONTAINERS

I. Task Statement: Bury or Burn Chemical Containers

II. Task Performance Cue(s): A one days supply are empty and ready for disposal.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Do the containers have complete labels?	2	12		
2. Read label to determine disposal method.			3	
3. Is container burnable?	13	4		
4. Is container recyclable?	16	5		
5. Were contents mercury, lead, arsenic, cadnium, or an inorganic pesticide?	12	6		
6. Select suitable safety equipment.			7	
7. Select suitable open field site for burial.			8	
8. Dig 18" deep hole.			9	
9. Crush containers.			10	
10. Cover with 18" of soil.			11	
11. Clean and store equipment.			EOT	
12. Send to chemical landfill.			EOT	
13. Locate suitable location for incinerator.			14	
14. Select proper safety equipment for burning.			15	
15. Burn one days supply.			11	
16. Return containers to manufacturer.			EOT	

DOMAIN: DISPOSAL OF CHEMICAL CONTAINERS

TASK: Bury or Burn Chemical Containers

Generalizable to all Tasks in the Disposal of Chemical Containers Domain	Generalizable to the Bury or Burn Chemical Containers Task	Transferrable to all Tasks in the Disposal of Chemical Containers Domain	Transferrable to the Bury or Burn Chemical Containers Task
ST #1		ST #1	
Label Information		Label Information	
Learning Content:		Learning Content:	
1. Rules for reading labels to obtain necessary disposal and safety information.		Read label.	
2. Rules for disposing of chemical containers with missing labels.		2. Determine method of disposal from label. 3. Select safety cloting and equipment.	
ST #2		ST #2	
Group I Chemicals		Group I Chemical	
Learning Content:		Learning Content:	
1. Rules for burying containers.		1. Prepare container for burying.	
2. Rules for burning containers.		2. Prepare place for burial. 3. Bury container.	
3. Rules for recycling containers.		4. Prepare place for burning. 5. Burn container. 6. Send container to recycling center.	

DOMAIN: DISPOSAL OF CHEMICAL CONTAINERS

TASK: Burn or Bury Chemical Containers (Continued)

ST #3 Group II Chemicals Learning Content: 1. Rules for burying containers. 2. Rules for recycling containers.		ST #3 Group II Chemicals Learning Content: 1. Prepare container for burial. 2. Prepare site for burial. 3. Bury container. 4. Send container to recycling center.
ST #4 Group III Chemicals Learning Content: 1. Rules for determining if container was rinsed. 2. Rules for burying rinsed containers in a sanitary landfill. 3. Rules for disposing of unrinsed containers.		ST #4 Group III Chemicals Learning Content: 1. Determine if the container was rinsed. 2. Rinse container. 3. Bury container in sanitary landfill. 4. Take unrinsed containers to special landfill.
ST #5 Clean-up Learning Content: 1. Rules for cleaning up equipment. 2. Rules for cleaning safety clothing.		ST #5 Clean-up Learning Content: 1. Clean-up all equipment used. 2. Clean all safety equipment.

DATA SHEET B

CONTENT LIMITS

DOMAIN: DISPOSAL OF CHEMICAL CONTAINERS

Section I. Label Information

A. Label Cues

1. Burnable - Group I
    a. organic
    b. metallo-organic
2. Non-burnable - Group II
    a. organic
    b. metallo-organic
3. Mercury, lead, arsenic, cadnium, and inorganic - Group III
4. Safety precautions
5. Methods of disposal
    a. open burning
    b. burial
    c. recycling
    d. pesticide incinerator
    e. pesticide landfill

B. Missing Labels

1. Handling precautions (Assume Group III)
2. Disposal procedure (Assume Group III)

Section II. Group I Chemicals

A. Burying Containers

1. Landfill site selection
2. Water contamination
3. Depth of burial

B. Burning Containers

1. Local regulations
2. Pesticide incinerator design
3. Location of incinerator
4. Daily schedule of burning

C. Recycling

1. Label restrictions
2. Recycling centers

Section III. Group II Chemicals

A. Burying Containers

1. Landfill site selection
2. Water contamination
3. Depth of burial
4. Rinsing of containers
5. Crushing or puncturing containers

B. Recycling

1. Label restrictions
2. Recycling centers

Section IV. Group III Chemicals

A. Rinsed vs. Unrinsed Container

Triple rinse if acceptable

B. Burying Rinsed Containers

1. Landfill site selection
2. Water contamination
3. Depth of burial
4. Rinsing of containers
5. Crushing or puncturing containers
6. Recycling if permitted

C. Disposing of Unrinsed Containers

1. Special landfill selection
2. Encapsulation

Section V. Cleaning-up

A. Equipment

1. Washing shovel
2. Oiling shovel

B. Clothing

Label recommendations

PLANNING FORMAT

DRT 1.1, 1.2, 1.3, 1.4, and 1.5

DOMAIN: DISPOSAL OF CHEMICAL CONTAINERS

Subtask: Label Information
Group I Chemicals
Group II Chemicals
Group III Chemicals
Clean-up

Content Limits

See Data Sheet B, Sections I-V.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Empty chemical container
2. Safety equipment and clothing
3. Site for burial or burning of container
4. Tools and equipment needed
5. Clean-up supplies needed

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Reading a chemical label and determining correct method of container disposal including safety clothing and equipment to be used in disposal.
2. Describing correct method of disposal for unlabelled container.
3. Proper disposal of container furnished.
4. Performing clean-up of equipment and clothing.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 1.3, 1.4, and 1.5

DOMAIN. DISPOSAL OF CHEMICAL CONTAINER

For this test you will be required to perform the following:

1. Read chemical labels and determine correct method of container disposal.
2. Select and use proper safety clothing and equipment.
3. Describe correct method for disposing of unlabeled containers
4. Describe the proper methods of handling Group I, II, and III containers including unrinsed containers.
5. Dispose of the container provided properly.
6. Clean-up equipment and clothing.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, 1.3, 1.4, and 1.5

DOMAIN: DISPOSAL OF CHEMICAL CONTAINER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correctly identified Group I containers.
		2. Correctly identified Group II containers.
		3. Correctly identified Group III containers.
		4. Described proper method for handling unlabeled containers.
		5. Disposed of container properly.
		6. Cleaned equipment and clothing properly.

A* = Acceptable
U = Unacceptable

DOMAIN: DELIVERY OF CHEMICALS

TASK 1: Deliver Chemical to Customer

PERFORMANCE OBJECTIVE

Given a chemical delivery sheet, chemicals, and truck, deliver the chemicals specified on the delivery sheet to the desired delivery point without damage or missing items.

PERFORMANCE GUIDE

1. Determine what chemicals are to be delivered from the written order sheets.
    - a. Read the label on the chemical container.
    - b. Follow all safety precautions specified on the label.
2. Dispose of leaky containers properly as required by contents and chemical safety rules.
3. Load chemicals.
4. Secure the containers to prevent shifting, rolling or bouncing.
5. Obtain the name of the customer and directions to the delivery point.
6. Deliver chemicals to desired delivery point.
7. Unload chemicals in a safe storage area.
8. Obtain signature of customer if present.
9. Thank customer for business if present.

DOMAIN: DELIVERY OF CHEMICALS

TASK 2: Transfer Dry Chemical at Delivery Point

PERFORMANCE OBJECTIVE

Given dry chemical, transfer the chemical at the delivery point in accordance with the most rigorous safety standards on the label of any chemical being transferred.

PERFORMANCE GUIDE

1. Read the label for safety procedures.
2. Wear safety equipment.
   a. Wear protective clothing.
   b. Wear proper goggles.
   c. Wear face shields.
   d. Wear respirator.
   e. Have water available.
3. Keep chemical container fastened down to prevent breakage and spillage.
4. Keep chemical away from food, feed, and other people.
5. Keep paper and cardboard packages dry.
6. Be sure auger equipment is in safe operating order.
7. Be sure storage bins are in safe condition.
8. Stand up wind from the chemical transfer point.
9. Transfer chemical to appropriate area.
10. Clean up any spills promptly and properly.
11. Relock storage areas.

DOMAIN: DELIVERY OF CHEMICALS

TASK 3: Transfer Liquid Chemical at Delivery Point

PERFORMANCE OBJECTIVE

Given liquid chemical, transfer the chemical at the delivery point in accordance with the most rigorous safety standards on the label of any chemical being transferred.

PERFORMANCE GUIDE

1. Read the label for safety procedures.
2. Wear safety equipment.
    a. Wear protective clothing.
    b. Wear proper goggles.
    c. Wear face shields.
    d. Wear respirator.
    e. Have water available.
3. Keep chemical container fastened down to prevent breakage and spillage.
4. Keep chemical away from food, feed, other people.
5. Be sure storage area is in safe condition.
6. Stand up wind from the chemical transfer point.
7. Transfer chemical to appropriate area.
8. Clean up any spills promptly and properly.
9. Relock storage areas.

TASK ANALYSIS

DOMAIN: DELIVERY OF CHEMICALS

I. Task 1: Deliver Chemical to Customer

II. Task Performance Cue(s): Supervisor asks applicator to deliver chemicals to customer.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Are there any bills or work order sheets to be taken care of?	2	4		
2. Do the appropriate paper work before the chemical is loaded.			3	
3. Determine what chemicals are to delivered from the written order sheets.			4	
4. Is the chemical familiar?	6	5		
5. Read the label on the chemical container and all available information.			6	
6. Is the chemical dangerous to man?	7	8		
7. Could the chemical create a health hazard during transportation?	8	12		
8. Are the safety precautions familiar?	6	5		
9. Never carry pesticides inside car or truck cab.			10	
10. Never transport livestock, feeds,seeds, or groceries in the same load with pesticides.			11	
11. Are all containers free from leaks?	13	12		
12. Transfer chemical to appropriate container.			13	
13. Label substitute container properly.			14	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
14. Dispose of empty container properly.			15	
15. Clean up spilled chemical promptly and properly.			16	
16. Leave storage area locked.			EOT	

TASK ANALYSIS

DOMAIN: DELIVERY OF CHEMICALS

I. Task 2: Transfer Dry Chemical at Delivery Point

II. Task Performance Cue(s): Supervisor asks you to transfer a few chemicals.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Read chemical label thoroughly including first aid procedure.			2	
2. Locate phone and location of nearest poison control or treatment center.			3	
3. Wear proper protective clothing.			4	
4. Wear proper goggles, face shields, respirator.			5	
5. Keep chemical container fastened down to prevent breakage and spillage.			6	
6. Keep the chemical away from food, feed, and other people.			7	
7. Keep the paper and cardboard packages dry.			8	
8. Is auger equipment in safe operating order?	10	9		
9. Inspect and/or repair auger.			10	
10. Are the storage bins in proper condition?	12	11		
11. Inspect and repair storage bins.			12	
12. Stand up wind from chemical transfer point.			13	
13. Dispose of all leaky containers properly.			14	
14. Load chemicals and secure the good containers to keep them from shifting, rolling or bouncing.			15	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
15. Obtain name of customer and directions to delivery destination.			16	
16. Deliver chemicals to desired destination.			17	
17. Is the customer's storage area safe tc use?	19	18		
18. Be tactful in suggesting a safe place for the chemicals.			19	
19. Unload chemicals in safe storage area.			20	
20. Obtain signature of customer if necessary.			21	
21. Thank customer for his business if present.			EOT	

TASK ANALYSIS

DOMAIN: DELIVERY OF CHEMICALS

I. Task 3: Transfer Liquid Chemical at Delivery Point

II. Task Performance Cue(s): Supervisor asks you to transfer chemicals

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Read chemical label thoroughly including first aid procedure.			2	
2. Locate phone number and location of nearest poison control or treatment center.			3	
3. Wear proper protective clothing including face shield or respirator.			4	
4. Restrain chemical containers to prevent damage.			5	
5. Keep chemicals away from people, livestock, feed or food.			6	
6. Are any containers damaged or leaking?	11	7		
7. Are storage facilities in proper condition.	8	14		
8. Transfer chemical to appropriate storage area.			9	
9. Clean up spilled chemicals promptly and properly.			10	
10. Lock storage area.			EOT	
11. Transfer chemical to proper undamaged container.			12	
12. Label substitute container completely.			13	
13. Properly dispose of empty container.			7	
14. Inspect and prepare storage area.			8	

DOMAIN: DELIVERY OF CHEMICALS

TASK 1: Deliver Chemical to Customer

Generalizable to all Tasks in the Delivery of Chemicals Domain	Generalizable to the Delivery Chemical to Customer Task	Transferrable to all Tasks in the Delivery of Chemicals Domain	Transferrable to the Delivery Chemical to Customer Task
	ST #1 Interpreting Order Sheet Learning Content: Rules for reading order sheet.		ST #1 Interpreting Order Sheet Learning Content: Read order sheet looking for needed information.
ST #2 Safety Learning Content: 1. Rules for recognizing dangerous chemicals. 2. Rules for handling and transporting chemicals. 3. Rules for wearing appropriate safety clothing. 4. Rules for cleaning up spilled chemicals. 5. Rules for handling damaged containers. 6. Rules for transferring chemicals.		ST #2 Safety Learning Content: 1. Read labels looking for safety information. 2. Wear required protective clothing. 3. Adjust respirator. 4. Identify wind direction. 5. Lock storage area. 6. Clean up spilled chemical. 7. Separate chemicals from food, feed, animals, and people. 8. Label substitute containers. 9. Transfer contents of broken or leaky containers. 10. Dispose of empty containers.	

DOMAIN: DELIVERY OF CHEMICALS

TASK 1: Deliver Chemical to Customer (Continued)

ST #3 Storage Area Learning Content: 1. Rules for inspecting storage area. 2. Rules for recommending repairs for storage area.		ST #3 Storage Area Learning Content: 1. Inspect storage area for needed repairs. 2. Make recommendations for storage room repairs to customer.
ST #4 Completing the Transfer Learning Content: 1. Rules for chemical storage. 2. Rules for unloading. 3. Rules for dealing with the customer.		ST #4 Completing the Transfer Learning Content: 1. Check storage conditions at delivery point. 2. Unload chemicals. 3. Secure storage area. 4. Secure customer signature. 5. Thank customer.

DOMAIN: DELIVERY OF CHEMICALS

TASK 2: Transfer Dry Chemicals at Delivery Point

Generalizable to all Tasks in the Delivery of Chemicals Domain	Generalizable to the Transfer Dry Chemicals to Delivery Point Task	Transferrable to all Tasks in the Delivery of Chemicals Domain	Transferrable to the Transfer Dry Chemicals to Delivery Point Task
ST #1 Safety Learning Content: 1. Rules for recognizing dangerous chemicals. 2. Rules for handling and transporting chemicals. 3. Rules for wearing appropriate safety clothing. 4. Rules for cleaning up spilled chemicals. 5. Rules for handling damaged containers. 6. Rules for transferring chemicals.		ST #1 Safety Learning Content: 1. Read labels looking for safety information. 2. Wear required protective clothing. 3. Adjust respirator. 4. Identify wind direction. 5. Lock storage area. 6. Clean up spilled chemical. 7. Separate chemicals from food, feed, animals, and people. 8. Label substitute containers. 9. Transfer contents of broken or leaky containers. 10. Dispose of empty containers.	
	ST #2 Auger Equipment Learning Content: 1. Rules for inspecting auger equipment.		ST #2 Auger Equipment Learning Content: 1. Inspect auger.

DOMAIN: DELIVERY OF CHEMICALS

TASK 2: Transfer Dry Chemicals at Delivery Point (Continued)

	2. Rules for repairing auger equipment.		2. Operate auger. 3. Repair auger. 4. Adjust auger.
ST #3 Storage Area Learning Content: 1. Rules for inspecting storage area. 2. Rules for recommending repairs for storage area.		ST #3 Storage Area Learning Content: 1. Inspect storage area for needed repairs. 2. Make recommendations for storage room repairs to customer.	
ST #4 Completing the Transfer Learning Content: 1. Rules for chemical storage. 2. Rules for unloading. 3. Rules for dealing with the customer.		ST #4 Completing the Transfer Learning Content: 1. Check storage conditions at delivery point. 2. Unload chemicals. 3. Secure storage area. 4. Secure customer signature. 5. Thank customer.	

DOMAIN: DELIVERY OF CHEMICALS

TASK 3: Transfer Liquid Chemcials at Delivery Point

Generalizable to all Tasks in Delivery of Chemicals Domain	Generalizable to the Transfer Liquid Chemicals at Delivery Point Task	Transferrable to all Tasks in the Delivery of Chemicals Domain	Transferrable to the Transfer Liquid Chemicals at Delivery Point Task
ST #1 Safety Learning Content: 1. Rules for recognizing dangerous chemicals. 2. Rules for handling and transporting chemicals. 3. Rules for wearing appropriate safety clothing. 4. Rules for cleaning up spilled chemicals. 5. Rules for handling damaged containers. 6. Rules for transferring chemicals.		ST #1 Safety Learning Content: 1. Read labels looking for safety information. 2. Wear required protective clothing. 3. Adjust respirator. 4. Identify wind direction. 5. Lock storage area. 6. Clean up spilled chemical. 7. Separate chemicals from food, feed, animals, and people. 8. Label substitute containers. 9. Transfer contents of broken or leaky containers. 10. Dispose of empty containers.	
	ST #2 Handling Liquid Chemicals Learning Content: Rules for arranging chemicals.		ST #2 Handling Liquid Chemicals Learning Content: Store liquid chemicals separate from dry chemicals.

DOMAIN: DELIVERY OF CHEMICALS

TASK 3: Transfer Liquid Chemicals at Delivery Point (Continued)

ST #3 Storage Area Learning Content: 1. Rules for inspecting storage area. 2. Rules for recommending repairs for storage area.		ST #3 Storage Area Learning Content: 1. Inspect storage area for needed repairs. 2. Make recommendations for storage room repairs to customer.	
ST #4 Completing the Transfer Learning Content: 1. Rules for chemical storage. 2. Rules for unloading. 3. Rules for dealing with the customer.		ST #4 Completing the Transfer Learning Content: 1. Check storage conditions at delivery point. 2. Unload chemicals. 3. Secure storage area. 4. Secure customer signature. 5. Thank customer.	

DATA SHEET A

CONTENT LIMITS

DOMAIN: DELIVERY OF CHEMICALS

Section I. Deliver Chemical to Customer

Interpreting Order Sheet

1. Chemical name
2. Formulation
3. Amount
4. Date of delivery

Section II. Transfer Dry Chemical at Delivery Point

A. Inspecting Auger Equipment

1. Check adjustments
2. Visual inspection
3. Operating to check

B. Repairing Auger Equipment

1. Identifying problem
2. Ordering repair part
3. Assembly or performing repair
4. Operating to check

Section III. Transfer Liquid Chemical at Delivery Point

Store Liquid and Dry Chemicals Separately.

DATA SHEET B

CONTENT LIMITS

DOMAIN: DELIVERY OF CHEMICALS

Section I. Safety

A. Dangerous Chemicals

1. Feed additives
2. Fertilizer, anhydrous ammonia
3. Pesticides
4. Other chemicals

B. Signal Words

1. Caution
2. Warning
3. Danger

C. Handling and Transporting

1. Separating from other stored materials
2. Securing during transport
3. Separating from driver and other storage materials during transport.
4. Proper protective equipment
5. Separating liquid and dry chemicals

D. Protective Clothing

1. Label instructions
2. Most restrictive chemical to be handled

E. Damaged Container and Spillage

1. Clean-up of spillage
2. Cleaning of equipment used in clean-up
3. Disposal of spillage
4. Disposal of container

F. Transferring Chemicals

1. Substitute container
2. Re-labeling substitute container
3. Wind direction
4. Environmental conditions
5. Safety clothing

Section II. Storage Area

A. Inspecting

1. Chemical safety and label requirements met
2. Deterioration or damage

B. Repairing

1. Identifying problems
2. Advising customer of needed corrections

Section III. Completing the Transfer

A. Unloading

1. Monitoring for deterioration
2. Arrangement according to age
3. Separating dry and liquid chemicals

B. Customer Relations

1. Signatures
2. Expressing appreciation
3. Securing customer storage area

PLANNING FORMAT

DRT 1.1

DOMAIN: DELIVERY OF CHEMICALS

Subtask: Interpreting Order Sheet

Content Limits

See Data Sheet A, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

A customer order sheet

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

Interpreting a chemical order sheet, identifying the following information.

1. Chemical name
2. Formulation
3. Amount
4. Date of delivery

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: DELIVERY OF CHEMICALS

For this test you will be required to perform the following:

Interpret a chemical order sheet, identify the following information:

1. Chemical name
2. Formulation
3. Amount
4. Date of delivery

PLANNING FORMAT

DRT 1.2, 2.1, and 3.1

DOMAIN: DELIVERY OF CHEMICALS

Subtask: Safety

Content Limits

See Data Sheet B, Section I

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Sample liquid and dry chemical containers complete with labels.
2. A list of signal words.
3. Protective gear, required for the most restrictive label used.
4. Damaged or deteriorating chemical containers filled with chemical or simulated substance.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Identifying chemicals according to type.
2. Identifying damaged or deteriorating containers and demonstrating proper handling.
3. Identifying proper method of disposal for empty containers.
4. Identifying the meaning of several signal words used on chemical labels.
5. Identifying 3 ways that chemicals can enter the body.
6. Identifying and demonstrating (if applicable) the protective gear needed for use with a given chemical as detected from the label.

EXAMINEE INSTRUCTIONS

DRT 1.2, 2.1, and 3.1

DOMAIN: DELIVERY OF CHEMICALS

For this test you will be required to perform the following:

1. Group chemicals according to type.

2. Identifying damaged containers and demonstrating proper handling procedures.

3. Describing proper rules for disposal of a sample empty container.

4. Listing the meaning of several signal words commonly found on chemical labels.

5. Listing 3 ways that chemicals can enter the body.

6. Identifying the correct protective gear needed for use with a given chemical as detected from a sample label.

PERFORMANCE CHECKLIST

DRT 1.2, 2.1, and 3.1

DOMAIN: DELIVERY OF CHEMICALS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Grouped chemicals correctly according to type.
		2. Correctly identified damaged containers.
		3. Located proper substitute container.
		4. Properly transferred chemical to new container.
		5. Correctly re-labeled new containers (if necessary).
		6. Correctly listed procedures for disposal of empty container.
		7. Correctly defined the meaning of the given signal words.
		8. Correctly listed 3 ways chemicals can enter body.
		9. Identified correct protective gear for use with the given chemical.
		10. Demonstrated proper protective equipment usage (where applicable).

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.3, 1.4, 2.2, 2.3, 2.4, 3.2, 3.3, and 3.4

DOMAIN: DELIVERY OF CHEMICALS

Subtasks: Completing the Transfer
Inspecting and Using Auger Equipment
Storage Area
Handling Liquid Chemicals

Content Limits

See Data Sheet A, Sections II and III.
See Data Sheet B, Sections II and III.

Test Stimulus Characteristics

The student will be provided the following data, materials, and supplies:

1. Labels from several liquid and dry chemicals.
2. Auger

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Listing the essential security and storage measures necessary for storing a group of chemicals.
2. Inspecting and using auger equipment.
3. Developing and maintaining good customer relations.

EXAMINEE INSTRUCTIONS

DRT 1.3, 1.4, 2.2, 2.3, 2.4, 3.2, 3.3, and 3.4

DOMAIN: DELIVERY OF CHEMICALS

For this test you will be required to perform the following:

1. Using the labels provided, recommend essential security and storage measures that a customer should be told.
2. Inspect the auger for correct operation.
3. Describe the repair procedures if the auger is damaged.
4. Demonstrate the proper use of an auger.
5. List the rules for good customer relations at the completion of a delivery.

PERFORMANCE CHECKLIST

DRT 1.3, 1.4, 2.2, 2.3, 2.4, 3.2, 3.3, and 3.4

DOMAIN: DELIVERY OF CHEMICALS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Recommended correct essential storeroom security and storage measures for the labels provided.
		2. Inspected auger for correct operation.
		3. Described auger repair procedures.
		4. Demonstrated correct use of the auger.
		5. Listed the rules for good customer relations at the completion of a delivery.

A* = Acceptable
U = Unacceptable

DOMAIN: LOCATING FIELD TO BE TREATED

TASK 1: Locate Field to be Treated on Map

PERFORMANCE OBJECTIVE

Given a county map, description, name of the farm to be treated, locate the farm field.

PERFORMANCE GUIDE

1. Locate farm on county map.
2. Locate field on farm map.
3. Recheck to be sure the field is the one the farmer wants treated.

DOMAIN: LOCATING FIELD TO BE TREATED

TASK 2: Locate Field to be Treated by Verbal Description

PERFORMANCE OBJECTIVE

Given a field to be treated, locate it by verbal description. Upon completion, the field will be located accurately.

PERFORMANCE GUIDE

1. Obtain farmers name and address.
2. Obtain explanation of field location in relation to place of business.
3. Estimate the distance to the farm.
4. Determine the best possible route to farm.
5. Use radiodispatch truck if possible to eliminate any questions about correct farm and field.
6. Obtain a field layout of the farm.
7. Obtain a description of the location of the field on the farm.
8. Obtain an estimate of field size.
9. Confirm that the field to be located has been correctly located after arrival.

TASK ANALYSIS

DOMAIN: LOCATING FIELD TO BE TREATED

I. Task 1: Locate Field to be Treated on Map.

II. Task Performance Cue(s): Customer has called and has asked applicator to apply chemical on one of his fields.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the farm on the county map?	3	2		
2. Obtain map of county in which the field is located.			3	
3. Locate farm on the county map.			4	
4. Is the farm map available?	6	5		
5. Obtain a map of the farm.			6	
6. Locate the field on the farm map.			7	
7. Re-check to be sure the field is the one the farmer wanted treated.			EOT	

TASK ANALYSIS

DOMAIN: LOCATING FIELD TO BE TREATED

I. Task 2: Locate Field to be Treated by Verbal Description

II. Task Performance Cue(s): Employer or customer asks you to locate a field to be treated by verbal description.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Obtain customer's name and address.			2	
2. Has employer or customer given you a complete verbal description of the location of the field to be treated?	9	3		
3. Ask where the farm is in relation to your place of business. (North, South, East, or West)			4	
4. Obtain an estimate of the distance to the farm.			5	
5. Ask for the best possible route to the farm.			6	
6. Ask for the location of the farm in relation to the final road taken.			7	
7. Ask about the layout of the farm and the field's location.			8	
8. Obtain an estimate of the fields approximate size			9	
9. Go to the field to be treated.			10	
10. Is the field located the correct one to be treated?	EOT	3		

DOMAIN: LOCATING FIELD TO BE TREATED

TASK 1: Locate Field to be Treated on Map

Generalizable to all Tasks in the Locating Field to be Treated Domain	Generalizable to the Locate Field to be Treated on Map Task	Transferrable to all Tasks in the Locating Field to be Treated Domain	Transferrable to the Locate Field to be Treated on Map Task
	ST #1 Map Interpretation Learning Content: 1. Rules for interpreting county map. 2. Rules for interpreting farm map.		ST #1 Map Interpretation Learning Content: 1. Locate farm with field to be treated on county map. 2. Locate field to be treated on farm map.
ST #2 Verifying Field Location Learning Content: Rules for verifying correct field to be treated.		ST #2 Verifying Field Location Learning Content: Verify that the correct field has been located.	

DOMAIN: LOCATING FIELD TO BE TREATED

TASK 2: Locate Field to be Treated by Verbal Description

Generalizable to all Tasks in the Locating Field to be Treated Domain	Generalizable to the Locate Field to be Treated by Verbal Description Task	Transferrable to all Tasks in the Locating the Field to be Treated Domain	Transferrable to the Locate Field to be Treated by Verbal Description Task
	ST #1 Collecting Information Learning Content: Rules for obtaining information concerning field location.		ST #1 Collecting Information Learning Content: Obtain field location information from customer or employer by verbal description.
ST #2 Verifying Field Location Learning Content: Rules for verifying correct field to be treated.		ST #2 Verifying Field Location Learning Content: Verify with farmer that the correct field has been located.	

DATA SHEET A

CONTENT LIMITS

DOMAIN: LOCATE FIELD TO BE TREATED

Section I. Locate Field to be Treated on Map

Map Interpretation

1. County map
2. Farm map

Section II. Locate Field to be Treated by Verbal Description

Collecting Information

1. Farmer's name and address
2. Location from business
3. Distance estimate
4. Best route to farm
5. Field size and location

DATA SHEET B

CONTENT LIMITS

DOMAIN: LOCATE FIELD TO BE TREATED

Section I. Verifying Field Location

A. Reliable 2 way communication system between applicator and dispatcher.

B. Confirmation by farm operator.

PLANNING FORMAT

DRT 1.1, 1.2, 2.1, and 2.2

DOMAIN: LOCATE FIELD TO BE TREATED

Subtasks: Map Interpretation
Collecting Information
Verifying Field Location

Content Limits

See Data Sheet A, Sections I and II.
See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided with the following data, material, and supplies

1. Customer's verbal description of a field to be treated.
2. County map
3. Farm map
4. A communication system that will verify correct field location.

Test Response Characteristics

The student will demonstrate the concepts, principles, and practices involved in:

1. Finding the location of a field to be treated on a county map.
2. Finding the exact field to be treated on a farm map.
3. Locating a field from a verbal description.
4. Verifying through the communication system that the correct field has been located.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 2.1, and 2.2

DOMAIN: LOCATE FIELD TO BE TREATED

For this test you will be required to perform the following:

1. Locate a farm with a field to be treated on a county map.
2. Find the exact location of the field to be treated on a farm map.
3. Locate a field to be treated from a verbal description.
4. Verify that the correct field has been located.

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 1: Store Chemicals

PERFORMANCE OBJECTIVE

Given a shipment of chemicals, store the chemicals. All items on the checklist will be rated acceptable.

PERFORMANCE GUIDE

1. Read label for storage requirements.
2. Prepare the storage area.
    a. Make lockable to keep out thieves or children.
    b. Provide for supplemental heat when needed for chemicals requiring critical temperatures.
    c. Make area cool for dry pesticides.
    d. Make area dry and well ventilated.
    e. Make area fire resistant.
    f. Post necessary "Danger Pesticides-Keep Out!" signs.
    g. Supply room with detergent, water absorbent materials, clean up equipment and fire extinguisher.
3. Check containers for leaks or corrosion, bottles and jugs for deteriorating caps.
4. Label any substitute containers with complete label.
5. Store chemical neatly in designated areas by inventory sheet.
6. Check purchase record to confirm all chemicals have been obtained and stored.
7. Lock up area.

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 1: Store Chemicals

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Storage requirements obtained from label.
		2. Chemicals were stored with oldest stock in front.
		3. Chemicals were stored by grouping of chemicals.
		4. Chemicals were stored with grouping by size of containers.
		5. Liquid chemicals were stored apart from dry chemicals.
		6. Chemical containers were checked for leaks, deterioration of caps or corrosion. Damaged or defective containers were handled properly.
		7. Suitable containers were utilized and complete labels were attached to the new containers.
		8. Empty containers were disposed of in accordance with contents and label requirements.
		9. Storage area provided supplemental heat where required.
		10. Storage area secured.

A* = Acceptable
U = Unacceptable

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 2: Straighten up the Chemical Storeroom

PERFORMANCE OBJECTIVE

Given the task of straightening up the chemical storeroom straighten the chemicals. All items on the checklist will be rated acceptable.

PERFORMANCE GUIDE

1. Wear safety clothing and equipment required by chemical labels.
2. Store any mislocated chemicals in correct location.
    a. Group all chemicals according to type in orderly way.
    b. Think ahead to the problems of taking inventory while straightening.
    c. Put all of one item in same group never covering up any other product.
    d. Prepare location guide for each chemical to post near entrance.
3. Clean and place all equipment, especially safety equipment where it can be reached quickly and easily.
4. Transfer chemical from leaking to nonleaking containers labeled appropriately.
5. Check and or change any light bulbs or tubes.
6. Sweep floor.
7. Put cleaning equipment away.
8. Clean safety clothing.

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 2: Straighten up the Chemical Storeroom

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Used safety clothing and equipment required by labels.
		2. Stored mislocated chemicals correctly.
		3. Grouped according to formulation.
		4. Grouped containers according to size.
		5. Put all of one type chemical together while not covering any other type.
		6. Placed all equipment within quick and easy reach.
		7. Transferred chemical from leaky to substitute container and labeled.
		8. Checked lights for burned out bulbs.
		9. Swept floor.
		10. Put clean up equipment away.

A* = Acceptable
U = Unacceptable

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 3: Take Inventory of Chemical Stock

PERFORMANCE OBJECTIVE

Given an inventory list, take an inventory of the chemical stock that is accurate as to quantities, type and sizes of chemicals on hand.

PERFORMANCE GUIDE

1. List each item on the inventory sheet in a logical and consistent sequence.
2. Obtain past inventory sheet, purchase record and sales list.
3. Check items on sheets in respect to the number left in stock.
4. Report any over or under stock to the manager.
5. Report any old or outdated chemicals to the manager.

TASK ANALYSIS

DOMAIN: MANAGING CHEMICAL STORAGE

I. Task 1: Store Chemicals.

II. Task Performance Cue: Supervisor asks you to store chemicals.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answer to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Are the requirements for a storage area known?	3	2		
2. Determine Requirements from reading label.			3	
3. Make the area lockable to keep out thieves or children.			4	
4. Make the area cool for dry pesticides.			5	
5. Make the area heated for certain liquids needing critical temperatures.			6	
6. Make sure area is dry and well ventilated.			7	
7. Make the area fire resistant.			8	
8. Are chemical warning signs posted?	10	9		
9. Signs should be up and read "Danger Pesticides-Keep Out!"			10	
10. Supply the room with detergent, water absorbant materials, clean up equipment and a fire extinguisher.			11	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
11. Check containers for leaks.			12	
12. Are there containers that must be disposed of?	13	15		
13. Properly dispose of containers.			14	
14. Label any substitute containers with a complete label.			15	
15. Store chemical neatly putting chemicals in proper designated areas as assigned by the inventory sheet.			16	
16. Check purchase record to be sure that all chemicals have been obtained and stored.			17	
17. Lock up area.			EOT	

TASK ANALYSIS

DOMAIN: MANAGING CHEMICAL STORAGE

I. Task 2: Straighten up the Chemical Storeroom.

II. Task Performance Cue: Supervisor asks you to clean up the chemical storeroom.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Steps	Tools, References, Work Aids
	Yes	No		
1. Is the correct safety clothing being worn to clean up the chemical storeroom?	3	2		
2. Protective eye covering, rubber gloves and other body covering should be worn if necessary, including a respirator.			3	
3. Are all chemicals and equipment in the correct location in the storeroom?	5	4		
4. Group all chemicals according to type in an orderly way thinking ahead to problems of taking inventory.			5	
5. Put all of one item in the same group never covering up different products with new types.			6	
6. Place all equipment, especially safety equipment, where it can be reached quickly and easily.			7	
7. Do any containers have leaks?	8	9		

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
8. Transfer chemical to a new container and place a complete duplicate label on it.			9	
9. Does any chemical bag have holes or tears?	10	11		
10. Transfer chemical to a new container and place a complete duplicate label on it.			11	
11. Check and change any light bulbs or tubes.			12	
12. Secure storage area.			EOT	

TASK ANALYSIS

DOMAIN: MANAGING CHEMICAL STORAGE

I. Task 3: Take Inventory of Chemical Stock.

II. Task Performance Cues: 1. Supervisor asks you to take inventory of chemical stock.

2. Annual inventory needed or required.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. List each item on inventory sheet in a logical sequence and be consistant as you go through the warehouse.			2	
2. Obtain inventory sheet from the last time it was done, the purchase record and sales record.			3	
3. Check items on sheets in respect to the number left in stock.			4	
4. Does the supply from the beginning inventory purchase records and sales records justify the present inventory without any over or under supply?	EOT	5		
5. Report any over or under stock to the manager.			EOT	

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 1: Store Chemicals

Generalizable to all Tasks in Managing Chemical Storage Domain	Generalizable to the Store Chemicals Task	Transferrable to all Tasks in Managing Chemical Storage Domain	Transferrable to the Store Chemicals Task
ST #1 Storage Requirements		ST #1 Storage Requirements	
Learning Content:		Learning Content:	
1. Rules for obtaining storage requirements from label.		1. Make a listing of storage requirements from reading labels.	
2. Rules for preparing storage area.		2. Prepare storage area.	
3. Rules for storage area security.		3. Provide security for storage area.	
ST #2 Safety		ST #2 Safety	
Learning Content:		Learning Content:	
1. Rules for monitoring storage area.		1. Monitor storage area.	
2. Rules for handling damaged or deteriorated containers.		2. Transfer chemical to replacement container. 3. Dispose of damaged or deteriorated container.	
3. Rules for choosing proper protective clothing and safety equipment.		4. Choose proper protective clothing and safety equipment.	
4. Rules for cleaning and disposal of safety materials and clothing.		5. Clean protective gear and equipment. 6. Dispose of worn-out protective materials and clothing.	

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 1: Store Chemicals (Continued)

ST #3 Storing Pattern Learning Content: 1. Rules for storing according to inventory sheet. 2. Rules for checking purchase record. 3. Rules for placement of safety equipment.		ST #3 Storing Pattern Learning Content: 1. Arrange inventory according to inventory sheet. 2. Check purchase record. 3. Arrange safety equipment.

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 2: Straighten Up Chemical Storeroom

Generalizable to all Tasks in Managing Chemical Storage Domain	Generalizable to Straighten Up Chemical Storeroom Task	Generalizable to all Tasks in Managing Chemical Storage Domain	Generalizable to Straighten Up Chemical Storeroom Task
ST #1 Storage Requirements		ST #1 Storage Requirements	
Learning Content:		Learning Content:	
1. Rules for obtaining storage requirements from label.		1. Make a listing of storage requirements from reading labels.	
2. Rules for preparing storage area.		2. Prepare storage area.	
3. Rules for storage area security.		3. Provide security for storage area.	
ST #2 Safety	ST #2 Safety	ST #2 Safety	ST #2 Safety
Learning Content:	Learning Content:	Learning Content:	Learning Content:
1. Rules for monitoring storage area.	1. Rules for maintaining lighting system.	1. Monitor storage area.	1. Perform maintenance on lighting systems.
2. Rules for handling damaged or deteriorated containers.	2. Rules for maintaining temperature and humidity control systems.	2. Transfer chemical to replacement container.	2. Perform maintenance on ventilation, humidity, heating, and cooling equipment.
3. Rules for choosing proper protective clothing and safety equipment.	3. Rules for maintaining sanitary conditions.	3. Dispose of damaged or deteriorated container.	3. Perform sanitary maintenance of floors and storage material.
4. Rules for cleaning and disposal of safety materials and clothing.	4. Rules for maintaining safety equipment.	4. Choose proper protective clothing and safety equipment.	4. Perform maintenance of all safety equipment.
		5. Clean protective gear and equipment.	
		6. Dispose of worn-out protective materials and clothing.	

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 2: Straighten Up Chemical Storeroom (Continued)

ST #3 Storing Pattern Learning Content: 1. Rules for storing according to inventory sheet. 2. Rules for checking purchase record. 3. Rules for placement of safety equipment.		ST #3 Storing Pattern Learning Content: 1. Arrange inventory according to inventory sheet. 2. Check purchase record. 3. Arrange safety equipment.	

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 3: Take Inventory of Chemical Stock

Generalizable to all Tasks in Managing Chemical Storage Domain	Generalizable to Take Inventory of Chemical Stock Task	Transferrable to all Tasks in Managing Chemical Storage Domain	Transferrable to Take Inventory of Chemical Stock Task
ST #1 Storage Requirements		ST #1 Storage Requirements	
Learning Content:		Learning Content:	
1. Rules for obtaining storage requirements from label.		1. Make a listing of storage requirements from reading labels.	
2. Rules for preparing storage area.		2. Prepare storage area.	
3. Rules for storage area security.		3. Provide security for storage area.	
ST #2 Safety		ST #2 Safety	
Learning Content:		Learning Content:	
1. Rules for monitoring storage area.		1. Monitor storage area.	
2. Rules for handling damaged or deteriorated containers.		2. Transfer chemical to replacement container.	
3. Rules for choosing proper protective clothing and safety equipment.		3. Dispose of damaged or deteriorated container.	
4. Rules for cleaning and disposal of safety materials and clothing.		4. Choose proper protective clothing and safety equipment.	
		5. Clean protective gear and equipment.	
		6. Dispose of worn-out protective materials and clothing.	

DOMAIN: MANAGING CHEMICAL STORAGE

TASK 3: Take Inventory of Chemical Stock (Continued)

ST #3

Storing Pattern

Learning Content:

1. Rules for storing according to inventory sheet.
2. Rules for checking purchase record.
3. Rules for placement of safety equipment.

ST #4

Preparing an Inventory Sheet

Learning Content:

1. Rules for obtaining relevant information for inventory sheet.
2. Rules for completing inventory sheet.
3. Rules for evaluating inventory sheet.

ST #3

Storing Pattern

Learning Content:

1. Arrange inventory according to inventory sheet.
2. Check purchase record.
3. Arrange safety equipment.

ST #4

Preparing an Inventory Sheet

Learning Content:

1. Locate existing inventory sheet, purchase record, and sales record.
2. Complete the inventory sheet.
3. Record items of understock and overstock.
4. Report any inventory irregularities.

DATA SHEET A

CONTENT LIMITS

Domain: MANAGING CHEMICAL STORAGE

Section I. Straighten Up Chemical Storeroom

Safety

1. Performing maintenance on lighting system
    a. changing bulbs
    b. checking for deterioration
    c. cleaning fixture
2. Performing maintenance on ventilation, humidity, heating, and cooling systems
    a. checking measuring instruments for accuracy
    b. checking equipment for deterioration
    c. cleaning equipment
3. Performing sanitary maintenance of floors and storage materials
    a. cleaning floors
    b. dusting stored materials
    c. preventing accumulations of dust or dirt
4. Performing maintenance of all safety equipment
    a. cleaning safety equipment
    b. checking safety equipment for deterioration
    c. storing safety equipment

Section II. Take Inventory of Chemical Stock

Preparing an Inventory Sheet

1. Obtaining relevant information for inventory
    a. existing inventory
    b. purchase records
    c. sales records
2. Completing inventory sheet
    a. logical, consistent arrangement
    b. verifying existing stock
    c. items no longer in stock
3. Evaluating inventory
    a. understocked items
    b. overstocked items
    c. differences between inventory, sales and purchase records

DATA SHEET B

CONTENT LIMITS

Domain: MANAGING CHEMICAL STORAGE

Section I. Storage Requirements

- A. Determining Storage Requirements from Reading the Label
    - 1. Temperature restrictions
    - 2. Moisture control
    - 3. Ventilation
    - 4. Fire resistance
- B. Preparing Storage Area
    - 1. Warning signs
    - 2. Installation of locks and security devices
    - 3. Heating, cooling, or ventilation
    - 4. Separating from feed and animals, etc.
    - 5. Separation of dry and liquid chemicals

Section II. Safety

- A. Monitoring of Storage Area
    - 1. Locks
    - 2. Warning signs
    - 3. Deteriorated containers
    - 4. Safety equipment
    - 5. Damaged containers
    - 6. Checking inventory lists for completeness
- B. Handling Damaged or Deteriorated Containers
    - 1. Transferring
    - 2. Disposal
    - 3. Label substitute containers
- C. Choosing Proper Protective Clothing and Safety equipment
    - 1. Clean up materials
    - 2. Fire protection equipment
    - 3. First aid equipment
    - 4. Clothing
    - 5. Requirements for most restrictive label

D. Cleaning and Disposal of Safety Materials and Clothing

1. Cleaning procedures
2. Disposal procedures

Section III. Storing Pattern

A. Arranging Stock

1. Chemical type
2. Chemical formulation
3. Chemical size
4. Facilitating inventory
5. Controlling aging
6. Facilitating retrieval
7. Matching to invoice
8. Matching to Bill of Lading

B. Checking Purchase Record

1. Price
2. Quantity
3. Tax
4. Chemicals needed

C. Arranging Safety Equipment

1. Fire protection equipment
2. Clean up equipment
3. First aid equipment

PLANNING FORMAT

DRT 1.1, 2.1, and 3.1

Domain: MANAGING CHEMICAL STORAGE

Subtask: Storage Requirements

Content Limits

See Data Sheet B, Section I

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Five chemical containers - 2 with deterioration or damage.
2. Two chemical containers with labels.
3. Diagram and description of a storage area, including the following:
    a. doorways, windows, and ventilation openings
    b. heating source
    c. flooring material
    d. type and amount of chemicals to be stored
    e. type of locks on openings
    f. other materials stored in same room

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Identifying damaged or deteriorated containers
2. Reading and determining storage requirements from a chemical label
3. Making a plan for the preparation of a chemical storage area including the following:
    a. placement of warning signs
    b. placement of locks for security
    c. provision for heating, cooling, and ventilation
    d. separation of chemicals from feed and animals, etc.
    e. separation of dry vs. liquid chemicals

EXAMINEE INSTRUCTIONS

DRT 1.1, 2.1, and 3.1

DOMAIN: MANAGING CHEMICAL STORAGE

For this test you will be required to perform the following:

1. Identify damaged or deteriorated chemical containers.

2. Read a chemical label and determine the necessary storage requirements.

3. Make a plan for the preparation of a chemical storage area including the following:

   a. placement of warning signs
   b. placement of locks
   c. provision for heating, cooling, ventilation
   d. arrangement of chemicals in relation to other stored materials
   e. storage of dry vs. liquid chemicals

PERFORMANCE CHECKLIST

DRT 1.1, 2.1, and 3.1

DOMAIN: MANAGING CHEMICAL STORAGE

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correct identification of damaged or deteriorated containers.
		2. Correct and complete interpretation of storage requirements from label.
		3. Adequate plan for storage area
		a. installation of locks for security
		b. provision for adequate ventilation
		c. provision for heat if necessary
		d. provision for cooling if necessary
		e. measures to control moisture
		f. proper placement of warning posters
		g. separation of dry vs. liquid chemicals
		h. separation of chemicals from other storage materials.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.2, 2.2, and 3.2

DOMAIN: MANAGING CHEMICAL STORAGE

Subtask: Safety

Content Limits

See Data Sheet A, Section I
See Data Sheet B, Section II

Test Stimulus Characteristics

The student will be provided with the following data, material, and supplies.

1. A chemical container with a complete label.
2. Checklist of safety materials potentially needed for managing chemical storage.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Reading a chemical label and identifying special safety precautions necessary for storage.
2. Inspecting a chemical container and identifying special safety precautions necessary for storage.
3. Identifying safety materials potentially needed for storage of the chemical provided.

EXAMINEE INSTRUCTIONS

DRT 1.2, 2.2, and 3.2

DOMAIN: MANAGING CHEMICAL STORAGE

For this test you will be required to perform the following:

1. Read a chemical label and determine special safety requirements for storage.

2. Inspect a chemical container and determine special safety requirements for storage.

3. Complete a checklist of safety materials potentially needed for safe storage of this chemical.

PERFORMANCE CHECKLIST

DRT 1.2, 2.2, and 3.2

DOMAIN: MANAGING CHEMICAL STORAGE

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Identification of special safety precautions from reading of label or observing type of container.
		a. recognition of need for protective clothing
		b. recognition of need for replacement of damaged container
		c. recognition of need for replacement of label
		d. other label requirements
		2. Identification of safety materials potentially needed for storage of the chemical provided.
		a. warning signs
		b. protective clothing
		c. fire extinguisher
		d. water
		e. other safety items

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.3, 2.3, 3.3, and 3.4

DOMAIN: MANAGING CHEMICAL STORAGE

Subtask: Storing Chemicals

Content Limits

See Data Sheet A, Section II
See Data Sheet B, Section III

Test Stimulus Characteristics

The student will be provided with the following data, material, and supplies.

1. A group of chemical containers (5-10) complete with labels.
2. Sample inventory sheets
   a. previous inventory sheet
   b. blank inventory sheet
3. Purchase record
4. Sales record

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Interpreting the previous inventory sheet.
2. Completing the current inventory sheet in logical sequence.
3. Reconciling present inventory to sales records, purchase records, and previous inventory.

EXAMINEE INSTRUCTIONS

DRT 1.3, 2.3, 3.3, and 3.4

DOMAIN: MANAGING CHEMICAL STORAGE

For this test you will be required to perform the following:

1. Interpret a previous inventory form.
2. Complete a current inventory form with correct organization of chemicals.
3. Reconcile the present inventory with the past inventory, sales records, and purchase records.

DOMAIN: WRITE RECEIPTS

TASK 1: Write Sales Ticket on Purchase

PERFORMANCE OBJECTIVE

Given a customer making a purchase, write a sales ticket with no mistakes, and all details of the sale included. Upon completion, both the customer and company will have a copy of the sales ticket.

PERFORMANCE GUIDE

1. Determine if purchase is "Cash payment," "To be billed," or "Add to account."
2. Select appropriate company form to use for sales ticket.
3. Clearly print purchaser information.
    a. name
    b. address
    c. phone number
4. Clearly print purchase date.
5. Determine what is being purchased.
6. Print exact details of purchase.
    a. product name
    b. price per unit
    c. number of units purchased
    d. total price of purchase
7. Add tax on separate line and total.
8. Clearly designate method of payment to be made.
9. Have customer sign sales ticket.
10. Put signature or employee identification number in proper place and order.
11. Give the customer one copy of sales ticket.
12. File the company copy in proper place and order.

DOMAIN: WRITE RECEIPTS

TASK 2: Write Receipt for Cash Payment

PERFORMANCE OBJECTIVE

Given a customer making a cash payment, write a receipt with no mistakes. Upon completion, both the customer and company will have a copy of the receipt.

PERFORMANCE GUIDE

1. Determine if payment is "On account" or for a purchase.
2. Select appropriate company form to use for receipt.
3. Clearly print customer information (as required by company).
    a. name
    b. address
    c. phone number
4. Clearly print payment date.
5. Determine if cash payment is for a purchase.
6. If no sales ticket has been previously completed then clearly print exact details of purchase on receipt.
    a. product name
    b. price per unit
    c. number of units purchased
    d. total price of purchase
    e. tax
    f. total payment
7. Record total amount of cash payment made.
8. Record type of cash payment.
    a. currency
    b. check
    c. credit card
    d. other
9. Have customer sign sales ticket (as required by company).
10. Put signature or employee identification number in proper place and order.
11. Give customer one copy of receipt.
12. File the company copy in proper place and order.
13. Deposit the payment in proper place.

TASK ANALYSIS

DOMAIN: WRITE RECEIPTS

I. Task 1: Write Sales Ticket on Purchase

II. Task Performance Cue(s): Need to write a sales ticket for a customer purchase.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Has a purchase been made?	2	EOT		
2. Determine method of payment.			3	
3. Is payment to be made in cash?	17	4		
4. Is payment "To be billed?"	6	5		
5. Is payment "Add to account?"	6	2		
6. Select appropriate company form.			7	
7. Clearly print purchaser information.			8	
8. Clearly print purchase date.			9	
9. Determine what is being purchased.			10	
10. Print exact details of purchase.			11	
11. Add tax and total.			12	
12. Designate method payment will be made.			13	
13. Have customer sign sales ticket.			14	
14. Put signature or employee identification number.			15	
15. Give customer copy of sales ticket.			16	
16. File company copy of sales ticket.			EOT	
17. Does company require separate sales ticket and receipt for cash purchase.	6	18		
18. See task 2 "Write receipts for cash payment"			EOT	

TASK ANALYSIS

DOMAIN: WRITE RECEIPTS

I. Task 2: Write Receipt for Cash Payment

II Task Performance Cue(s): Need to write a receipt for a cash payment by a customer.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is customer making a cash payment?	2	EOT		
2. Determine type of payment being made.			3	
3. Is payment "On account?"	10	4		
4. Is payment for a purchase?	5	2		
5. Has a sales ticket been previously prepared?		6		
6. Select appropriate company form.			7	
7. Determine what is being purchased.			8	
8. Print exact details of purchase.			9	
9. Add tax on total.			11	
10. Select appropriate company form.			11	
11. Clearly print customer information.			12	
12. Record total amount of cash payment being made.			13	
13. Record type of cash payment.			14	
14. Is customer signature required by company?	15	16		
15. Have customer sign receipt.			16	
16. Put signature or employee identification number on receipt.			17	
17. Give customer one copy of receipt.			18	

TASK ELEMENTS	Decisions Yes	 No	Go To Step	Tools, References, Work Aids
18. File one copy of receipt.			19	
19. Deposit payment in proper place.			EOT	

DOMAIN: WRITE RECEIPTS

TASK 1: Write Sales Ticket on Purchase

Generalizable to all Tasks in Write Receipts Domain	Generalizable to the Write Sales Ticket on Purchase Task	Transferrable to all Tasks in the Write Receipts Domain	Transferrable to the Write Sales Ticket on Purchase Task
ST #1		ST #1	
Collecting Information		Collecting Information	
Learning Content:		Learning Content:	
1. Rules for determining type of transaction being made.		1. Ask customer for information about the type of transaction he wants to make.	
2. Rules for collecting customer information.		2. Find out customer personal data.	
3. Rules for collecting product information.		3. Find out product data.	
ST #2		ST #2	
Recording Information		Recording Information	
Learning Content:		Learning Content:	
1. Rules for determining correct form.		1. Find correct company form.	
2. Rules for recording type of transaction.		2. Record type of information.	
3. Rules for recording customer information.		3. Record customer information.	
4. Rules for recording product information.		4. Record product information.	

DOMAIN: WRITE RECEIPTS

TASK 1: Write Sales Tickets on Purchase (Continued)

ST #3

Completing Transaction

Learning Content:

1. Rules for completing price information.
2. Rules for validating sales ticket.
3. Rules for distributing copies.

ST #3

Completing Transaction

Learning Content:

1. Total order.
2. Compute tax.
3. Re-total with tax.
4. Have customer sign.
5. Put employee signature or identification number.
6. Give one copy to customer.
7. File company copy.

DOMAIN: WRITE RECEIPTS

TASK 2: Write Receipt for Cash Payment

Generalizable to all Tasks in Write Receipts Domain	Generalizable to Write Receipts on Purchase Task	Transferrable to all Tasks in Write Receipts Domain	Transferrable to Write Receipts on Purchase Task
ST #1 Collecting Information Learning Content: 1. Rules for determining type of transaction being made. 2. Rules for collecting customer information. 3. Rules for collecting product information.		ST #1 Collecting Information Learning Content: 1. Ask customer for information about the type of transaction he wants to make. 2. Find out customer personal data. 3. Find out product data.	
	ST #2 Determining Type of Cash Payment Learning Content: Rules for determining type of cash payment.		ST #2 Determining Type of Cash Payment Learning Content: Ask customer what type of cash payment he/she is making.
ST #3 Recording Information Learning Content: 1. Rules for determining correct form. 2. Rules for recording type of transaction. 3. Rules for recording customer information. 4. Rules for recording product information		ST #3 Recording Information Learning Content: 1. Find correct company form. 2. Record type of transaction. 3. Record customer information. 4. Record product information	

DOMAIN: WRITE RECEIPTS

TASK 2: Write Receipt for Cash Payment (Continued)

ST #4	ST #4	ST #4	ST #4
Completing Transaction	Completing Transaction	Completing Transaction	Completing Transaction
Learning Content:	Learning Content:	Learning Content:	Learning Content:
1. Rules for completing price information.	1. Rules for recording type of cash payment	1. Total order.	1. Record type of cash payment made.
2. Rules for validating sales ticket.	2. Rules for depositing payment.	2. Compute tax.	2. Deposit payment.
3. Rules for distributing copies.		3. Re-total with tax.	
		4. Have customer sign.	
		5. Put employee signature or identification number.	
		6. Give one copy to customer.	
		7. File company copy.	

DATA SHEET A

CONTENT LIMITS

DOMAIN: WRITE RECEIPTS

Section I. Write Sales Ticket on Purchase

Section II. Write Receipt for Cash Payment

- A. Determining Type of Cash Payment.
- B. Completing Transaction.
  - 1. Recording type of cash payment made
    - a. entering in proper place on form.
    - b. if check - record check number
    - c. if credit card - record credit information
    - d. if other - record information
  - 2. Depositing payment
    - a. endorsement
    - b. security
    - c. company procedures

DATA SHEET B

CONTENT LIMITS

DOMAIN: WRITE RECEIPTS

Section I. Collecting Information

- A. Type of Transaction
  - 1. Cash payment
  - 2. To be billed
  - 3. Add to account
- B. Customer Information
  - 1. Name
  - 2. Address
  - 3. Phone number
- C. Product Information
  - 1. Name
  - 2. Price per unit
  - 3. Number of units purchased
  - 4. Total price of purchase

Section II. Recording Information

- A. Company Forms
  - 1. Sales ticket
  - 2. Receipt book
  - 3. Other forms
- B. Type of Transaction
  - 1. Check in box
  - 2. Enter in blank
  - 3. Other designations
- C. Customer Information
  - 1. Legible printing
  - 2. Correct spelling
- D. Product Information
  - 1. Legible printing
  - 2. Inventory matched

Section III. Completing Transaction

- A. Price Information
  - 1. Total cost
  - 2. Customer discount
  - 3. Tax
  - 4. Re-total

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B. Validating Sales Ticket
   1. Customer signature
   2. Employee signature or identification number

C. Distributing Copies
   1. Customer
   2. File

PLANNING FORMAT

DRT 1.1, 1.2, 2.1,2.2 and 2.3

DOMAIN: WRITE RECEIPTS

Subtasks: Collecting Information
Determining Type of Cash Payment
Recording Information

Content Limits

See Data Sheet A, Section II
See Data Sheet B, Sections I and II

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. A sample agricultural chemical.
2. Inventory and price information.
3. A simulated customer exchange.
4. Sales ticket book, receipt book, or other appropriate form.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Determining type of transaction customer wants to make.
2. Determining type of cash payment customer wishes to make (if applicable).
3. Choosing the proper book or form to use for the appropriate type of transaction.
4. Making an entry on the form that identifies the type of transaction occurring.
5. Acquiring customer information.
6. Printing customer information on form.
7. Determining product information.
8. Printing product information on form.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 2.1, 2.2 and 2.3

DOMAIN: WRITE RECEIPTS

For this test you will be required to perform the following:

1. Determine through verbal questioning the type of transaction that a customer wishes to make.
2. Determine through verbal questioning the type of cash payment the customer wishes to make (if applicable).
3. Choose the proper book or form to use for writing up a simulated transaction.
4. Make an entry on the form that identifies the type of transaction occurring.
5. Determine through verbal questioning the customer information necessary for writing up a transaction.
6. Legibly and correctly printing customer information on the correct place on the form.
7. Determine the product information necessary for writing up the transaction.
8. Legibly and correctly print product information in the correct place on the form.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, 2.1, 2.2 and 2.3

DOMAIN: WRITE RECEIPTS

A*	U	EVALUATIVE STATE AND CRITERIA
		1. Correctly determined type of payment to be made.
		2. Correctly determined type of cash payment to be made (if applicable).
		3. Chose correct book or form for simulated transaction.
		4. Made correct entry in proper place on form to identify the type of purchase made.
		5. Correctly determined customer information.
		6. Legibly and correctly printed customer information on form.
		7. Correctly determined product information.
		8. Legibly and correctly printed product information on form.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.3 and 2.4

DOMAIN: WRITE RECEIPTS

Subtask: Completing Transaction

Content Limits

See Data Sheet A, Section II
See Data Sheet B, Section III

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Receipt, sales ticket, or other appropriate form complete with customer and product information from simulated transaction.
2. Price information for a simulated transaction.
3. Information on special arrangements or customer discount (if applicable).
4. File and depository for receipt copies and payment.

Test Response Characteristics

The student will demonstrate the concepts, principles, and practice involved in:

1. Recording unit and total prices of all products on form.
2. Figuring customer discount or making note of special arrangements.
3. Computing tax and totaled bill.
4. Validating the sales ticket.
5. Recording the type of cash payment that is being made by customers (if applicable).
6. Distributing copies of form to customers and file.
7. Depositing payment.

EXAMINEE INSTRUCTIONS

DRT 1.3 and 2.4

DOMAIN: WRITE RECEIPTS

For this test you will be required to perform the following:

1. Record the units and total prices of products purchased in correct place on form.
2. Figure customer discount or make note of special arrangements in correct place on form (if applicable).
3. Compute sales tax, enter, and total bill.
4. Validate sales ticket or receipt.
5. Record type of cash payment customer is making (if applicable).
6. Distribute copies of form to customers and file.
7. Deposit payment in company designated manner.

PERFORMANCE CHECKLIST

DRT 1.3 and 2.4

DOMAIN: WRITE RECEIPTS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correctly recorded units and total prices of products purchased.
		2. Recorded prices and units in proper place.
		3. Correctly figured customer discount or made note of special arrangements (if applicable).
		4. Correctly computed and entered sales tax.
		5. Correctly totaled bill.
		6. Correctly recorded type of cash payment customer made.
		7. Correctly validated sales ticket or receipt with signature or identification number.
		8. Gave customer correct copy of receipt or sales ticket.
		9. Accurately filed correct copy of receipt or sales ticket.
		10. Used correct procedures in handling and depositing payment.

A* = Acceptable
U = Unacceptable

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

TASK 1: Record Accounts Payable

PERFORMANCE OBJECTIVE

Given a need for a purchase, process a purchase order and record the accounts payable information without error.

PERFORMANCE GUIDE

1. Check clerical accuracy of vendor's invoices.
2. Match purchase order, receiving report and vendor invoice.
3. Reconcile vendor statements with accounts payable detail.
4. Use pre-numbered debit memos for returns and price adjustments.
5. Review unmatched receiving reports.
6. Review any debit balances.
7. Take all cash discounts.

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

TASK 2: Record Accounts Receivable

PERFORMANCE OBJECTIVE

Given a sales ticket, record the selling transaction without error.

PERFORMANCE GUIDE

1. Compare invoices to sales orders before recording, then record to accounts receivable and to subsidiary ledger for individual account record.
2. Have someone review invoices and check for math errors.
3. Reconcile sale with cash receipts and accounts receivable.

TASK ANALYSIS

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

I. Task 1: Record Accounts Payable

II. Task Performance Cue(s): A customer has made a purchase and you must record accounts payable.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Has the responsibility of recording accounts payable been designated to you?	3	2		
2. Establish independence of accounts payable personnel from purchasing, cashier and receiving functions.			1	
3. Obtain pre-numbered purchase orders.			4	
4. Have the purchase orders been okayed by proper personnel?	6	5		
5. Obtain proper personnel approval for purchase orders.			6	
6. Maintain control over purchase returns.			7	
7. Check clerical accuracy of vendors invoices.			8	
8. Match purchase order, receiving report and vendor invoice.			9	
9. Reconcile vendor statements with accounts payable detail.			10	
10. Use pre-numbered debit memos for returns and price adjustments.			11	
11. Review any unmatched receiving reports.			12	
12. Review any debit balances.			13	
13. Take all cash discounts.			EOT	

TASK ANALYSIS

DOMAIN: RECORDS ACCOUNTS PAYABLE AND RECEIVABLE

I. Task 2: Record Accounts Receivable

II. Task Performance Cue(s): A customer has made a purchase and you must record accounts receivable.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Has the responsibility of recording accounts receivable been designated to you?	3	2		
2. Determine if you are responsible for recording accounts receivable, sales, receipts, billing, shipping personnel.			1	
3. Decide upon a credit policy based on monetary size of sale and necessity of cash.			4	
4. Separate independent control over credit and sales.			5	
5. Pre-number sales tickets and receipts.			6	
6. Compare invoices to sales orders before recording.			7	
7. Record to "Accounts Receivable" account records, and to "Subsidiary Ledger" for individual account records.			8	
8. Have someone review invoices and check for math errors.			9	
9. Establish control over returned merchandise.			10	
10. Use pre-numbered credit memorandums.			11	
11. Match credit memos and receiving reports.			12	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
12. Establish control over sales to employees.			13	
13. Reconcile sales with cash receipts and accounts receivable.			14	
14. Reconcile sales with inventory change.			15	
15. Send periodic statements to all customers.			16	
16. Periodically prepare an aging schedule.			17	
17. Follow up on over due accounts.			18	
18. Establish policy over account write offs.			EOT	

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

TASK 1: Record Accounts Payable

Generalizable to all Tasks in the Record Accounts Payable and Receivable Domain	Generalizable to the Record Accounts Payable Task	Transferrable to all Tasks in the Record Accounts Payable and Receivable Domain	Transferrable to the Record Accounts Payable Task
ST #1 Set Up Recording System Learning Content: 1. Rules for selecting record books. 2. Rules for setting columns and labeling. 3. Rules for establishing independence of accounts.		ST #1 Set Up Recording System Learning Content: 1. Select record book. 2. Set columns for debit and credit. 3. Label distinct accounting sections.	
	ST #2 Record Accounts Payable Learning Content: 1. Rules for obtaining and approving purchase orders. 2. Rules for maintaining accuracy of purchase records. 3. Rules for making adjustments and handling irregularities.		ST #2 Record Accounts Payable Learning Content: 1. Obtain purchase orders. 2. Obtain authorized approval for orders. 3. Reconcile purchase orders, receiving report and vendor invoices. 4. Review any unmatched recieving reports. 5. Review any debit balances. 6. Take all cash discounts. 7. Make bookkeeping entries.

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

TASK 2: Record Accounts Receivable

Generalizable to all Tasks in the Record Accounts Payable and Receivable Domain	Generalizable to the Record Accounts Receivable Task	Transferrable to all Tasks in the Record Accounts Payable and Receivable Domain	Transferrable to the Record Accounts Receivable Task
ST #1 Set Up Recording System Learning Content: 1. Rules for selecting record book. 2. Rules for setting columns and labeling. 3. Rules for establishing independence of accounts.		ST #1 Set Up Recording System Learning Content: 1. Select Record book. 2. Set columns for debit and credit. 3. Label distinct accounting sections.	
	ST #2 Record Accounts Receivable Learning Content: 1. Rules for establishing a credit policy. 2. Rules for recording accounts receivable. 3. Rules for making out bills.		ST #2 Record Accounts Receivable Learning Content: 1. Establish or study company credit policy. 2. Make bookkeeping entries. 3. Reconcile invoices to sales orders. 4. Review discrepencies between sales and inventory changes. 5. Review discrepencies between sales and cash-credit balances. 6. Prepare and mail customer statements.

DATA SHEET A

CONTENT LIMITS

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

Section I. Record Accounts Payable

A. Purchase Orders

1. Pre-numbered company approved forms
2. Approval by proper authority

B. Purchase Records

1. Accuracy of vendor's invoice
2. Matching of purchase orders, receiving report, and vendors invoice
3. Matching of vendor statements with accounts payable

C. Adjustments and Irregularities

1. Pre-numbered debit memos for returns and price adjustments
2. Review of unmatched receiving reports
3. Review of debit balances
4. Cash discounts

Section II. Record Accounts Receivable

A. Credit Policy

1. Monetary size of sale
2. Necessity for Cash

B. Recording Accounts Receivable

1. Independent control over credit and sales
2. Pre-numbered sales invoice
3. Recording to "Accounts receivable" for account records
4. Recording to "Subsidiary ledger" for individual records
5. Checking for mistakes and math errors
6. Control over returned merchandise
7. Pre-numbered credit memorandums

C. Making Out Bills

1. Matching credit memorandums and receiving reports
2. Controlling sales to employees
3. Reconciling sales with cash receipts and accounts receivable
4. Reconciling sales with inventory charge
5. Preparing and mailing periodic statements to customers
6. Preparing periodic aging schedule
7. Following up over due accounts
8. Policy for account write-offs

DATA SHEET B

CONTENT LIMITS

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

Section I. Set Up Recording System

A. Selecting Record Books

1. Company policies
2. Accounting system

B. Setting Columns and Labeling

1. Debit
2. Credit
3. Wages paid
4. Purchases
5. Inventory
6. Sales
7. Depreciation
8. Other

C. Independence of Accounts

1. Accounts payable
2. Accounts receivable, cashier, and purchasing
3. System of checks and balances

PLANNING FORMAT

DRT 1.1 and 2.1

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

Subtask: Set Up Recording System

__Content Limits__

See Data Sheet B, Section I

__Test Stimulus Characteristics__

The student will be provided with the following data, material, and supplies.

1. At least two different types or styles of record books for recording accounts payable and receivable.
2. A list of several different types of entries (depreciation, wages paid, etc.) commonly made by companies.

__Test Response Characteristics__

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Differentiating between at least two different types of record books.
2. Setting up debit and credit columns in the record book provided.
3. Labeling the columns for other types of entries necessary for the business.
4. Explaining a workable system of checks and balances in accounting.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 2.1

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

For this test you will be required to perform the following:

1. Explain the difference between at least two types of record books.
2. Set up debit and credit columns in record books.
3. Labeling columns for other types of entries that are given to you by the company.
4. Proposing a system of organizing jobs in an accounting department that facilitates a checks and balance dependence between employees.

PLANNING FORMAT

DRT 1.2

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

Subtask: Record Accounts Payable

Content Limits

See Data Sheet A, Section I

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Purchase order with deficiencies or mistakes.
2. Vendor's invoice and receiving report that correspond to the purchase order.
3. Record book for making accounts payable entries.
4. Debit memo and description of item to be returned.
5. Information concerning a cash discount.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Checking a purchase order for defeciencies and mistakes and making corrections.
2. Reconciling a purchase order, vendor's invoice, and receiving report.
3. Making a payment entry in the record book.
4. Preparing a debit memo for an item to be returned.
5. Calculating a cash discount.

EXAMINEE INSTRUCTIONS

DRT 1.2

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

For this test you will be required to perform the following:

1. Read a purchase order and locate 3 deficiencies or mistakes. Make corrections.
2. Compare a purchase order, vendor's invoice, and receiving report for consistency.
3. Making an entry for a payment made in the record book.
4. Preparing a debit memo for an item to be returned.
5. Calculating a cash discount.

PERFORMANCE CHECKLIST

DRT 1.2

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Located 3 deficiencies or mistakes or a purchase order.
		2. Made corrections of deficiencies or mistakes on purchase order.
		3. Found inconsistencies between purchase order.
		4. Made correct entry in record book.
		5. Correctly prepared debit memo.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 2.2

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

Subtask: Record Accounts Receivable

Content Limits

See Data Sheet A, Section II

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Sales invoice on simulated sale.
2. Record book for accounts receivable.
3. Subsidiary ledger for individual records.
4. Credit memorandum
5. Receiving report.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Transfering information from the sales invoice to record book for accounts receivable.
2. Transferring information from the sales invoice to subsidiary ledger for customer.
3. Preparing for mailing a statement of account to the customer.
4. Preparing a periodic aging schedule.
5. Reconciling a credit memorandum and receiving report.
6. Explaining procedures for follow-up on over-due accounts.
7. Explaining policies for handling account write-offs.

EXAMINEE INSTRUCTIONS

DRT 2.2

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

For this test you will be required to perform the following:

1. Transfer information from a sales invoice to a record book for accounts receivable.
2. Transfer information from a sales invoice to a subsidiary ledger for the customer.
3. Prepare for mailing a statement of account for the customer.
4. Prepare a periodic aging schedule.
5. Reconcile a credit memorandum and a receiving report.
6. Explain procedure for follow-up on over-due accounts.
7. Explain policies for handling account write-offs.

PERFORMANCE CHECKLIST

DRT 2.2

DOMAIN: RECORD ACCOUNTS PAYABLE AND RECEIVABLE

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Proper entry in accounts receivable book.
		2. Proper entry in subsidiary ledger.
		3. Correct mathematical calculations.
		4. Correctly prepared periodic statement of account.
		5. Correctly prepared periodic aging schedule.
		6. Discovered discrepencies between credit memorandum and receiving report.
		7. Reconciled credit memorandum and receiving report.
		8. Explained correct procedure for follow-up on over-due accounts.
		9. Explained correctly the policies for handling account write-offs.

A* = Acceptable
U = Unacceptable

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 1: Sell Chemical to Customer

PERFORMANCE OBJECTIVE

Given a selling situation, sell the customer a chemical to remedy the specific pesticide problem. All items on the checklist must be rated acceptable.

PERFORMANCE GUIDE

1. Recall any known facts about the customer.
2. Greet the customer.
3. Offer to help the customer.
4. Determine the customer's problem.
   a. Ask if it is a weed, insect, or other pest problems.
   b. Ask for details about the pest problems.
   c. Ask customer to bring in a sample if not sure of the pest.
5. Determine the customer's desired application method.
   a. Give the customer a choice of possible combination of chemicals that could be used.
   b. Explain the advantages and disadvantages of each possible choice.
   c. Quote prices on the different possible choices.
6. Determine the customer's final choice of a chemical.
   a. Calculate the quantity needed.
   b. Quote the total cost to the customer.
7. Ask if customer would like to buy the chemical.
   a. Draw up a bill of sale.
   b. Record customer's license to purchase restricted chemicals number.
8. Determine the time and location of delivery if desired by the customer.
9. Thank the customer for his/her business.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 1: Sell Chemicals to Customer

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Established rapport with customer.
		2. Identified customer's pest problem.
		3. Recommended appropriate chemicals for the control of the problem.
		4. Quoted prices for each chemical or combination.
		5. Sale was closed.
		6. Sales documents were accurately completed.
		7. Customer's license to purchase restricted chemicals number was recorded.

A* = Acceptable
U = Unacceptable

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 2: Make Recommendations for Fungus Control

PERFORMANCE OBJECTIVE

Given a fungi problem, make recommendations for its control. The chemical recommended will be adequate to control the problem with the least damage to the environment.

PERFORMANCE GUIDE

1. Determine the type of fungus problem and the extent of the damage.
2. Determine the host organism.
3. Determine what part of the plant is being damaged.
4. Make a list of possible choices to control the fungus.
    a. Read label to find restrictions on use.
    b. Read label to see if chemical can be used safely.
    c. Read label to see if environmental precaution is needed.
    d. Read label to see if formulation and amount of active ingredients are right for the job.
    e. Read label to see if the right equipment is available to apply.
    f. Read label to see if the right clothing is available.
    g. Read label to find how much fungicide is needed.
5. Determine best fungicide.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 3: Make Recommendations for Insect Control

PERFORMANCE OBJECTIVE

Given an insect problem, make recommendations for its control. The recommendation for insect control should be appropriate considering the insect and economic injury.

PERFORMANCE GUIDE

1. Determine what crop is being grown.
2. Determine the type of insect problem.
3. Determine what part of the plant is being damaged.
4. Determine the life stage of the insect.
5. Determine if damage to crop is from piercing-sucking mouth parts or chewing mouth parts.
6. Determine proper insecticide to use.
   a. Recommend systemic poison chemical.
   b. Recommend foliage coating poison chemical.
7. Explain proper application method.
8. Explain proper application time.
9. Quote price of chemical to the customer.
10. Determine the economic injury level of the insect for the specific Crop.
11. Determine whether the economic injury level warrants the expense of chemical treatment.
12. Make final recommendations to spray chemical or not to spray chemical.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 4: Make Recommendations for Weed Control

PERFORMANCE OBJECTIVE

Given a weed problem, make recommendations for its control. The recommendations for weed control should be appropriate considering the weed and economic injury.

PERFORMANCE GUIDE

1. Determine what crop is being grown.
2. Determine the type of weed problem, and whether "Carry-over" is a concern.
3. Determine if the weed is a broadleaf or a grass.
4. Determine proper herbicide to use.
   a. Make recommendation of grass herbicide.
   b. Make recommendation of broadleaf herbicide.
   c. Make recommendation of herbicide combinations.
5. Explain proper application method.
6. Explain proper application time.
7. Quote price of chemical to customer.
8. Determine the economic injury level of the weed for the specific crop.
9. Determine whether the economic injury level warrants the expense of the chemical treatment.
10. Make final recommendation to apply or not to apply chemical.

TASK ANALYSIS

DOMAIN: SELLING AGRICULTURAL CHEMICALS

I. Task 1: Sell Chemical to Customer

II. Task Performance Cue(s): Customer either calls or comes in to the business desiring to buy chemicals.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Recall any known relevant facts about the customer.			2	
2. Greet the customer.			3	
3. Ask the customer if you can help him or her.	4	EOT		
4. Does the customer have a weed problem?	6	5		
5. Does the customer have a insect problem?	26	7		
6. Does the customer have a specific weed problem?	7	21		
7. Determine the method of application that will be used by the customer.			8	
8. Is the weed a broadleaf?	9	23		
9. Give the customer a choice or a possible combinations of chemicals that could be used.			10	
10. Explain advantages and disadvantages of each possible choice of chemical.			11	
11. Quote prices on the different possible choices.			12	
12. Determine the customers choice of chemical.			13	
13. Calculate the quantity needed.			14	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
14. Quote total cost (include application charge and/or delivery charge if applicable).			15	
15. Does the customer wish to buy the chemical?	16	20		
16. Draw up the bill of sale for the chemical.			17	
17. Record customers license to purchase any restricted chemicals number.			18	
18. Did the customer want the chemical delivered?	19	20		
19. Determine time and location of delivery.			20	
20. Thank the customer for his or her business.			EOT	
21. Does the customer want to bring in a sample of the weed or weeds?	22	25		
22. Ask the customer to contact you when he has the sample of weeds to determine the proper herbicide.			EOT	
23. Is the weed problem a grass weed?	25	6		
24. Determine the method of application to be used by the customer.			9	
25. Suggest a general grass and broadleaf herbicide.			24	
26. Does the customer know the specific type of insect?	24	27		
27. Does the customer want to bring in a sample of the insects?	28	29		
28. Ask the customer to contact you when he has the sample of insects to determine the proper insecticide.			EOT	
29. Suggest a general insecticide for most common insect pests.			24	

TASK ANALYSIS

DOMAIN: SELLING AGRICULTURAL CHEMICALS

I. Task 2: Make Recommendations for Fungus Control.

II. Task Performance Cue(s): Customer asks you to make recommendations for fungus control.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine the fungi problem.			2	
2. Determine the extent of the damage.			3	
3. Determine the host organism.			4	
4. Determine what part of the plant is being damaged.			5	
5. Make a list of possible choices to control the fungus.			6	
6. Read label to find restrictions on use.			7	
7. Read label to see if correct chemical for problem.			8	
8. Read label to see if chemical can be used safely.			9	
9. Read label to see if environmental precaution needed.			10	
10. Read label to see if formulation and amount of active ingredient are right for job.			11	
11. Read label to see if you have right equipment to apply.			12	
12. Read label to see if you have right clothing.			13	
13. Read label to find out how much pesticide you need.			14	
14. Determine best pesticide.			EOT	

TASK ANALYSIS

DOMAIN: SELLING AGRICULTURAL CHEMICALS

I. Task 3: Make Recommendations for Insect Control

II. Task Performance Cue(s): Customer requests recommendations for insect control.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine what crop is being grown.			2	
2. Determine the type of insect problem.			3	
3. Determine what part of the plant is being damaged.			4	
4. Determine the life stage of the insect.			5	
5. Is the damage from a piercing sucking mouth part?	7	6		
6. Is the damage from a chewing mouth part?	8	17		
7. Recommend systemic poison chemical.			8	
8. Recommend foliage coating poison chemical.			9	
9. Explain proper application method.			10	
10. Explain proper application time.			11	
11. Quote price to the customer.			12	
12. Determine the economic injury level of the insect for the specific crop.			13	
13. Does the economic injury level warrant the expense of chemical treatment?	14	15		
14. Make final recommendation to spray chemical and close the sale.			16	
15. Make final recommendation not to spray chemical.			16	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
16. Thank the customer for his business.			EOT	
17. Determine possible type of damage being done by other than piercing sucking insect or chewing insects. (nematodes)			18	
18. Recommend proper chemical treatment.			9	

TASK ANALYSIS

DOMAIN: SELLING AGRICULTURAL CHEMICALS

I. Task 4: Make Recommendations for Weed Control

II. Task Performance Cue(s): A customer has requested recommendations for weed control.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine what crop was being grown.			2	
2. Determine type of weed problem.			3	
3. Determine if "Carry-over" is a concern.			4	
4. Determine what crop is being grown.			5	
5. Determine application method.			6	
6. Is the problem both broadleaf and grass?	8	7		
7. Is the problem a grass?	9	10		
8. Make recommendations on herbicide combinations.			11	
9. Make recommendations on grass herbicide.			11	
10. Make recommendations on broadleaf herbicide.			11	
11. Point out various cost of chemicals to customer.			EOT	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 1: Sell Chemical to Customer

Generalizable to all Tasks in the Selling Agricultural Chemicals Domain	Generalizable to the Sell Chemical to Customer Task	Transferrable to all Tasks in the Selling Agricultural Chemicals Domain	Transferrable to the Sell Chemical to Customer Task
ST #1		ST #1	
Establish Customer Rapport		Establish Customer Rapport	
Learning Content:		Learning Content:	
Rules for establishing customer rapport.		1. Greet customer by name 2. Recall relevant known facts about customer. 3. Offer to help customer. 4. Exhibit enthusiasm.	
ST #2		ST #2	
Analyze Problem		Analyze Problem	
Learning Content:		Learning Content:	
1. Rules for determining the type of problem 2. Rules for obtaining help in identification of a problem. 3. Rules for identifying economic factors.		1. Determine if problem is weeds, insects, or fungus. 2. Determine extent of damage. 3. Determine expected financial loss due to damage.	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 1: Sell Chemical to Customer (Continued)

ST #3 Analyze Label Learning Content: Rules for analyzing the label of the selected chemical.		ST #3 Analyze Label Learning Content: Read the chemical label for restrictions, safety procedures, and application procedures.
ST #4 Closing the Sale Learning Content: 1. Rules for drawing up sales ticket. 2. Rules for recording applicator license number. 3. Rules for recording delivery directions. 4. Rules for obtaining assistance.		ST #4 Closing the Sale Learning Content: 1. Obtain customer signature. 2. Receive payment. 3. Receipt payment. 4. Read the permit to purchase. 5. Record permit number. 6. Record delivery directions. 7. Obtain assistance when needed.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 2: Make Recommendations for Fungus Control

Generalizable to all Tasks in the Selling Agricultural Chemicals Domain	Generalizable to the Make Recommendations for Fungus Control Task	Transferrable to all Tasks in the Selling Agricultural Chemicals Domain	Transferrable to the Make Recommendations for Fungus Control Task
ST #1 Establish Customer Rapport Learning Content: Rules for establishing customer rapport.		ST #1 Establish Customer Rapport Learning Content: 1. Greet customer by name 2. Recall relevant known facts about customer. 3. Offer to help customer. 4. Exhibit enthusiasm.	
ST #2 Analyze Problem Learning Content: 1. Rules for determining the type of problem 2. Rules for obtaining help in identification of a problem. 3. Rules for identifying economic factors.		ST #2 Analyze Problem Learning Content: 1. Determine if problem is weeds, insects, or fungus. 2. Determine extent of damage. 3. Determine expected financial loss due to damage.	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 2: Make Recommendations for Fungus Control (Continued)

	ST #3 Recommendations for Fungus Control Learning Content: 1. Rules for determining the fungi problem. 2. Rules for recommending possible treatments.		ST #3 Recommendations for Fungus Control Learning Content: 1. Identify fungus problem. 2. Determine amount of damage. 3. Identify host organism. 4. Identify parts of the plants damaged. 5. Identify alternatives for treatment. 6. Recommend best chemical and application rate.
ST #4 Analyze Label Learning Content: Rules for analyzing the label of the selected chemical.		ST #4 Analyze Label Learning Content: Read the chemical label for restrictions, safety procedures, and application procedures.	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 2: Make Recommendations for Fungus Control (Continued)

ST #5		ST #5
Closing the Sale		Closing the Sale
Learning Content:		Learning Content:
1. Rules for drawing up sales ticket.		1. Obtain customer signature.
2. Rules for recording applicator license number.		2. Receive payment.
3. Rules for recording delivery directions.		3. Receipt payment.
4. Rules for obtaining assistance.		4. Read the permit to purchase.
		5. Record permit number.
		6. Record delivery directions.
		7. Obtain assistance when needed.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 3: Make Recommendations for Insect Control

Generalizable to all Tasks in the Selling Agricultural Chemicals Domain	Generalizable to the Make Recommendations for Insect Control Task	Transferrable to all Tasks in the Selling Agricultural Chemicals Domain	Transferrable to the Make Recommendations for Insect Control Task
ST #1 Establish Customer Rapport Learning Content: Rules for establishing customer rapport.		ST #1 Establish Customer Rapport Learning Content: 1. Greet customer by name. 2. Recall relevant known facts about customer. 3. Offer to help customer 4. Exhibit enthusiasm.	
ST #2 Analyze Problem Learning Content: 1. Rules for determining the type of problem 2. Rules for obtaining help in identification of a problem. 3. Rules for identifying economic factors.		ST #2 Analyze Problem Learning Content: 1. Determine if problem is weeds, insects, or fungus. 2. Determine extent of damage. 3. Determine expected financial loss due to damage.	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 3: Make recommendations for Insect Control (Continued)

ST #3

Recommendations for Insect Control

Learning Content:

1. Rules for determining the insect problem.
2. Rules for recommending possible treatments.

ST #4

Analyze Label

Learning Content:

Rules for analyzing the label of the selected chemical.

ST #3

Recommendations for Insect Control

Learning Content:

1. Identify insects.
2. Identify crop.
3. Identify type of damage.
4. Identify type of mouthparts.
5. Identify alternatives for treatment.
6. Recommend best chemical and application rates.

ST #4

Analyze Label

Learning Content:

Read the chemical label for restrictions, safety procedures, and application procedures.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 3: Make Recommendation for Insect Control (Continued)

ST #5 Closing the Sale Learning Content: 1. Rules for drawing up sales ticket. 2. Rules for recording applicator license number. 3. Rules for recording delivery directions. 4. Rules for obtaining assistance.		ST #5 Closing the Sale Learning Content: 1. Obtain customer signature. 2. Receive payment. 3. Receipt payment. 4. Read the permit to purchase. 5. Record permit number. 6. Record delivery directions. 7. Obtain assistance when needed.

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 4: Make Recommendations for Weed Control

Generalizable to all Tasks in the Selling Agricultural Chemicals Domain	Generalizable to the Make Recommendations for Weed Control Task	Transferrable to all Tasks in the Selling Agricultural Chemicals Domain	Transferrable to the Make Recommendations for Weed Control Task
ST #1 Establish Customer Rapport Learning Content: Rules for establishing customer rapport.		ST #1 Establish Customer Rapport Learning Content: 1. Greet customer by name. 2. Recall relevant known facts about customer. 3. Offer to help customer. 4. Exhibit enthusiasm.	
ST #2 Analyze Problem Learning Content: 1. Rules for determining the type of problem. 2. Rules for obtaining help in identification of a problem. 3. Rules for identifying economic factors.		ST #2 Analyze Problem Learning Content: 1. Determine if problem is weeds, insects, or fungus. 2. Determine extent of damage. 3. Determine expected financial loss due to damage.	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 4: Make Recommendations for Weed Control (Continued)

	ST #3 Recommendations for Weeds Learning Content: 1. Rules for determining the problem weeds. 2. Rules for recommending possible treatments.		ST #3 Recommendations for Weeds Learning Content: 1. Identify major weed problems. 2. Identify crop. 3. Assess estimated loss. 4. Identify alternative control. 5. Recommend best chemical and application rates.
ST #4 Analyze Label Learning Content: Rules for analyzing the label of the selected chemical.		ST #4 Analyze Label Learning Content: Read the chemical label for restrictions, safety procedures, and application procedures.	

DOMAIN: SELLING AGRICULTURAL CHEMICALS

TASK 4: Make Recommendations for Weed Control (Continued)

ST #5

Closing the Sale

Learning Content:

1. Rules for drawing up sales ticket.
2. Rules for recording applicator license number.
3. Rules for recording delivery directions.
4. Rules for obtaining assistance.

ST #5

Closing the Sale

Learning Content:

1. Obtain customer signature.
2. Receive payment.
3. Receipt payment
4. Read the permit to purchase.
5. Record permit number.
6. Record delivery directions.
7. Obtain assistance when needed.

DATA SHEET A

CONTENT LIMITS

DOMAIN: SELLING AGRICULTURAL CHEMICALS

Section I. Sell Chemical to Customer

Section II. Recommendations for Fungus Control

A. Determining Fungi Problem

1. Type of fungus
2. Extent of damage
3. Symptoms of disease
4. Host organism
5. Part of plant that is damaged

B. Recommending Possible Treatments

1. Cost of pesticide and application
2. Expected net financial benefit of using chemicals.
3. Broad-spectrum pesticides
4. Residual pesticides
5. Short-term pesticides

Section III. Recommendations for Insect Control

A. Determining Insect Problem

1. Type of insect
2. Life stage of insect development
3. Crop being grown
4. Part of plant being damaged
5. Type of insect mouth parts
6. Extent of damage to host crop

B. Recommending Possible Treatments

1. Cost of pesticide and application
2. Expected net financial benefit of using chemicals
3. Systemic poisons
4. Foliage-covering poisons
5. Contact poisons

Section IV. Recommendations for Weed Control

A. Determining Weed Problem

1. Type of weeds
2. Life cycle of weeds
3. Stage weeds are susceptible to control
4. Crop being grown.
5. Extent of damage to crop.

DATA SHEET A (Continued)

B. Recommending Possible Treatments

1. Cost of pesticide and application
2. Expected financial benefit of using chemicals
3. Selective herbicides
4. Non-selective herbicides

DATA SHEET B

CONTENT LIMITS

DOMAIN: SELLING AGRICULTURAL CHEMICALS

Section I. Establish Customer Rapport

A. Greeting by Name

B. Recalling Relevant Facts About Customer

C. Offering to Assist Customer

D. Showing Enthusiasm

Section II. Analyze Problem

A. Determining Type of Problem

1. Weed
2. Insect
3. Fungus

B. Obtaining Help in Identification of Problem

1. Local vocational agriculture instructors
2. County extension agent
3. State department of agriculture
4. University or college of agriculture

C. Identifying Economic Factors

1. Amount of damage
2. Expected financial loss to damage

Section III. Analyze Label

A. Restrictions on Use

B. Correctness of Chemical for Job

C. Environmental Precautions

D. Correctness of Formulation and Amount of Active Ingredients for Job

E. Application Time and Method

F. Equipment Needed for Application

G. Safety Clothing Needed

H. Procedures for Mixing and Handling

DATA SHEET B (Continued)

Section IV. Closing the Sale

- A. Sales Ticket
    1. Prices
    2. Quantity
    3. Kind of merchandise
    4. Tax
    5. Totals
- B. Handling Closure
    1. Record signatures
    2. Receive payment
    3. Write receipt
- C. Recording Applicator's License Number
    1. Federal and State Law
    2. Company policy
- D. Recording Delivery Directions
    1. Location
    2. Time
- E. Obtaining Assistance
    1. Answering questions
    2. Approving checks etc.

PLANNING FORMAT

DRT 1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 4.1, and 4.2

DOMAIN: SELL CHEMICAL TO CUSTOMER

Subtasks: Establish Customer Rapport
Analyze Problem

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

A simulated customer transaction.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Greeting customer
2. Offering assistance to customer
3. Determining type of problem
4. Compiling description of problem
5. Determining extent of damage
6. Determining expected financial loss due to damage

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 4.1, and 4.2

DOMAIN: SELL CHEMICAL TO CUSTOMER

For this test you will be required to perform the following:

1. Greet the customer by name.
2. Recall relevant facts known about the customer.
3. Offer assistance to customer.
4. Show enthusiasm.
5. Determine type of problem.
6. Determine the extent of damage.
7. Determine the expected financial loss ude to damage.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 4.1, and 4.2

DOMAIN: SELL CHEMICAL TO CUSTOMER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Greeted customer by name.
		2. Used relevant known facts about customer to establish rapport.
		3. Offered to assist customer.
		4. Exhibited enthusiasm.
		5. Determined type of problem.
		6. Determined the estimated extent of damage.
		7. Determined the estimated financial loss due to damage.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 2.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

Subtask: Recommendations for Fungus Control

Content Limits

See Data Sheet A, Section I.

Test Stimulus Characteristics

The student will be provided the following data, materials, and supplies.

1. Description of fungus problem (disease symptoms)
2. Description of location, type, and extent of crop damage
3. List of available fungicides
4. Cost of fungicides
5. Recommended application rates

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Analyzing a description of a fungus problem and identifying the specific fungus involved.
2. Identifying if chemicals are available to control the fungus.
3. Listing chemicals that can be used in treatment.
4. Classifying available chemicals according to type of activity.
5. Recommending one chemical.
6. Figuring application rates for the recommended chemical.
7. Figuring cost of chemical and application cost for the recommended chemical.
8. Figuring net financial benefit of using the chemical

EXAMINEE INSTRUCTIONS

DRT 2.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

For this test you will be required to perform the following:

1. Analyze a description of a fungus problem and identify the specific fungus involved.

2. Identify if chemicals are available to effectively control the fungus.

3. List the available chemicals that can be used to control the problem.

4. Classify available chemicals according to type of activity (Broad-spectrum, residual, short-term)

5. Recommend one chemical.

6. Figure application rate for the recommended chemical.

7. Figure cost of chemical and application for recommended chemical.

8. Figure net financial benefit of using the recommended chemical.

PERFORMANCE CHECKLIST

DRT 2.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correctly identified fungus involved.
		2. Correctly identified if chemicals are available for control.
		3. Listed possible chemicals that are available for use.
		4. Classified chemicals correctly.
		a. broad-spectrum
		b. residual
		c. short-term
		5. Recommended best chemical for the problem.
		6. Calculated correct application rate.
		7. Figured correct cost of chemical.
		8. Figured correct cost of application.
		9. Calculated correct net financial benefit of using the recommended chemical.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 3.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

Subtask: Recommendations for Insect Control

Content Limits:

See Data Sheet A, Section II.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Description of the insect.
2. Description of the location , type, and extent of crop damage.
3. List of available insecticides.
4. Cost of insecticides.
5. Recommended application rates.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Analyzing a description of an insect and identifying the specific insect involved.
2. Identifying if chemicals are available to effectively control the insect.
3. Listing chemicals that can be used in treatment.
4. Classifying available chemicals according to activity.
5. Recommending one chemical.
6. Figuring application rates for the recommended chemical.
7. Figuring cost of chemical and application cost for the recommended chemical.
8. Figuring net financial benefit of using the chemical.

EXAMINEE INSTRUCTIONS

DRT 3.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

For this test you will be required to perform the following:

1. Analyze a description of an insect and identify the specific insect involved.
2. Identify if chemicals are available to effectively control the insect.
3. List the available chemicals that are effective.
4. Classify available chemicals according to type of activity. (Systemic, foliage-covering, contact)
5. Recommend one chemical.
6. Figure application rate for the recommended chemical.
7. Figure cost of chemical and application for the recommended chemical.
8. Figure net financial benefit of using the recommended chemical.

PERFORMANCE CHECKLIST

DRT 3.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correctly identified insect involved.
		2. Correctly identified if chemicals are available for control.
		3. Listed possible chemicals that are available for use.
		4. Classified chemicals correctly.
		a. systemic
		b. foliage-covering
		c. contact
		5. Recommended the best chemical for the problem.
		6. Calculated correct application rate.
		7. Figured correct cost of chemical.
		8. Figured correct cost of application.
		9. Calculated correct net financial benefit of using the recommended chemical.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 4.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

Subtask: Recommendations for Weed Control

Content Limits

See Data Sheet, Section III.

Test Stimulus Characteristics

The student will be provided the following data, materials, and supplies.

1. Description of weed problem.
2. Description of type and extent of damage to the crop being grown.
3. List of available herbicides.
4. Cost of herbicides.
5. Recommended application rates.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Analyzing a description of a weed problem and identifying the specific weeds involved.
2. Determine if specific chemicals are available to control the weeds.
3. Listing chemicals that can be used in treatment.
4. Classifying available chemicals according to type of activity. (Selective or non-selective)
5. Recommending one chemical.
6. Figuring application rates for the recommended chemical.
7. Figuring the cost of the chemical and application cost.
8. Figuring net financial benefit of using the chemical.

EXAMINEE INSTRUCTIONS

DRT 4.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

For this test you will be required to perform the following:

1. Analyze a description of a weed problem and identify the specific weeds involved.
2. Identify if specific chemicals are available to control the weeds.
3. List the chemicals that are available for use in treatment.
4. Classify available chemicals according to the type of activity. (Selective or non-selective)
5. Recommend one chemical.
6. Figure the application rate for the recommended chemical.
7. Figure the cost of chemical and application cost.
8. Figure the net financial benefit of using the chemical.

PERFORMANCE CHECKLIST

DRT 4.3

DOMAIN: SELL CHEMICAL TO CUSTOMER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correctly identified the specific weeds involved.
		2. Correctly identified if chemicals are available for control.
		3. Listed possible chemicals that are available.
		4. Classified chemicals correctly.
		a. selective
		b. non-selective
		5. Recommended the best chemical for the problem.
		6. Calculated correct application rate.
		7. Figured correct cost of the chemical.
		8. Figured correct cost of application.
		9. Calculated correct net financial benefit of using the recommended chemical.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.3, 2.4, 3.4, and 4.4

DOMAIN: SELL CHEMICAL TO CUSTOMER

Subtask: Analyze Label

Content Limits

See Data Sheet B, Section III

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Fungicide chemical label.
2. Insecticide chemical label.
3. Herbicide chemical label.

Test Response Characteristics

1. Identifying the restrictions found on chemical labels.
2. Identifying the environmental precautions found on chemical labels.
3. Identifying directions for time and method of application found on the chemical label.
4. Identifying equipment needed for application as found on the chemical label.
5. Identifying safety clothing needed as found on the chemical label.
6. Identifying procedures for mixing and handling as found on the chemical label.

EXAMINEE INSTRUCTIONS

DRT 1.3, 2.4, 3.4, and 4.4

DOMAIN: SELL CHEMICAL TO CUSTOMER

For this test you will be required to perform the following:

Read a fungicide, insecticide, or herbicide chemical label and list the following:

a. Restrictions on use

b. Environmental precautions

c. Application times and methods required

d. Application equipment needed

e. Safety clothing needed

f. Procedures for mixing and handling

PERFORMANCE CHECKLIST

DRT 1.3, 2.4, 3.4, and 4.4

DOMAIN: SELL CHEMICAL TO CUSTOMER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		Correctly listed information from chemical label.
		A. Restrictions on use
		B. Environmental precautions
		C. Application times and methods required
		D. Application equipment needed
		E. Safety clothing needed
		F. Procedures for mixing and handling

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.4, 2.5, 3.5, and 4.5

DOMAIN: SELL CHEMICAL TO CUSTOMER

Subtask: Closing the Sale

Content Limits

See Data Sheet A, Section IV

Test Stimulus Characteristics

The student will be provided the following data, materials, and supplies.

1. Information on a simulated chemical sales to a customer
2. Sales ticket book or form
3. Receipt book or form
4. Delivery book or form

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Completing a sales ticket on a chemical sale
2. Handling closure of a sale
3. Recording applicators license number
4. Recording delivery directions

EXAMINEE INSTRUCTIONS

DRT 1.4, 2.5, 3.5, and 4.5

DOMAIN: SELL CHEMICAL TO CUSTOMER

For this test you will be required to perform the following:

1. Write a sales ticket on a chemical sales. Include the following:
   a. prices
   b. quantity
   c. kind of merchandise
   d. tax
   e. totals
2. Handle the closure of the sale.
   a. record signatures
   b. receive payment
   c. write a receipt
3. Record applicators license number.
4. Record delivery directions.

PERFORMANCE CHECKLIST

DRT 1.4, 2.5, 3.5, and 4.5

DOMAIN: SELL CHEMICAL TO CUSTOMER

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Properly completed the sales ticket.
		a. prices of chemicals listed
		b. quantity of chemicals listed
		c. kind of merchandise listed
		d. tax computed
		e. totals figured
		2. Handled closure of sale correctly.
		a. recorded signatures required
		b. received customer payment
		c. correctly wrote and handled receipt
		3. Recorded applicators license number.
		4. Recorded correct and complete delivery directions.

A* = Acceptable
U = Unacceptable

DOMAIN: SALES PROMOTION

TASK: Plan a Sales Promotion Meeting for Farmers

PERFORMANCE OBJECTIVE

Given the responsibility of planning a sales promotion meeting for farmers, plan the meeting to identify the farmers to be included, materials needed, publicity, cost, promotional prices, refreshments, and follow up. All checklist items will be rated acceptable.

PERFORMANCE GUIDE

1. Determine goal or purpose for the meeting.
2. Determine if enough materials and information is available for a meeting and compile.
3. Set up the meeting as to
    a. farmers to be addressed
    b. what is to be promoted
    c. when the meeting is to be held
    d. where the meeting is to be held
    e. how much the meeting will cost
4. Advertise the meeting through
    a. radio
    b. newspapers
    c. letters
    d. signs
    e. other
5. Make any final arrangements for the meal or refreshments if applicable.
6. Obtain any gifts or prizes to be given at the meeting.
7. Plan for any follow up after the meeting
    a. newspaper
    b. farm visits

DOMAIN: SALES PROMOTION

TASK: Plan a Sales Promotion Meeting for Farmers

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Selected product to be promoted.
		2. Gathered needed promotional materials.
		3. Developed farmer mailing list.
		4. Set up meeting facilities and location.
		5. Set time.
		6. Made necessary financial arrangements.
		7. Provided promotional advertising through
		a. radio
		b. newspaper
		c. letters
		d. posters
		8. Provided for meal or refreshments if desired.
		9. Obtained gifts or prizes given at meeting.
		10. Planned for meeting follow up
		a. newspaper
		b. farm visits

A* = Acceptable
U = Unacceptable

TASK ANALYSIS

DOMAIN: SALES PROMOTION

I. Task Statement: Plan a Sales Promotion Meeting for Farmers.

II. Task Performance Cue(s): Asked by employer to plan a sales promotion meeting for farmers.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Have you determined the purpose or goal for the meeting?	3	2		
2. Determine the goal or purpose for the meeting.			3	
3. Determine if enough materials and information are available for the meeting.			4	
4. Gather materials for the meeting.			5	
5. Determine the farmers to be addressed.			6	
6. Determine what is to be promoted.			7	
7. Determine when the meeting is to be held.			8	
8. Determine where the meeting is to be held.			9	
9. Determine how much the meeting will cost.			10	
10. Advertise the meeting on the radio in the newspaper, by letter or other means.			11	
11. Make final arrangements for meal or refreshments.			12	
12. Obtain any gifts or prizes to be given at the meeting.			13.	
13. Plan for any follow up after the meeting in the newspaper or through farm visits.			EOT	

DOMAIN: SALES PROMOTION

TASK: Plan a Sales Promotion Meeting for Farmers

Generalizable to all Tasks in the Sales Promotion Domain	Generalizable to the Plan a Sales Promotion Meeting for Farmers Task	Transferrable to all Tasks in the Sales Promotion Domain	Transferrable to the Plan A Sales Promotion Meeting for Farmers Task
ST #1 Establishing Purpose Learning Content: Rules for determining the goal of the meeting.		ST #1 Establishing Purpose Learning Content: 1. Decide on the items that are to be promoted. 2. Decide on the audience to be invited. 3. Decide on a general theme or purpose for the meeting	
ST #2 Setting Up the Meeting Learning Content: Rules for setting up the meeting.		ST #2 Setting Up the Meeting Learning Content: 1. Determine the meeting location. 2. Determine the meeting date and time. 3. Determine cost of meeting. 4. Plan the meal or refreshments. 5. Obtain gifts or door prizes. 6. Arrange for entertainment or speaker. 7. Organize the sales promotion.	

DOMAIN: SALES PROMOTION

TASK: Plan a Sales Promotion Meeting for Farmers (Continued)

		8. Establish a meeting agneda 9. Advertise the meeting. 10. Plan for meeting follow-up	
ST #3 Finalizing the Meeting Learning Content: Rules for making final arrangements for the meeting.		ST #3 Finalizing the Meeting Learning Content: 1. Confirm physical arrangements for meeting. 2. Confirm speakers or entertainment. 3. Prepare meeting room for meeting.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: SALES PROMOTION

Section I. Establishing Purpose

Goal of the Meeting
1. Merchandise to be promoted.
2. Audience to be reached.
3. General theme or purpose of meeting.

Section II. Setting up the Meeting

A. Meeting Location
B. Meeting date and time
C. Cost of meeting
D. Meal or refreshments
E. Gifts or door prizes
F. Entertainment or speaker
G. Sales promotion techniques
H. Meeting agenda
I. Advertisement of meeting
    1. Radio
    2. Newspaper
    3. Letter
    4. Other means
J. Follow-up of potential customers

Section III. Finalizing the Meeting

A. Confirmation of physical arrangements
B. Confirmation of speakers or entertainment
C. Preparing meeting room for meeting

PLANNING FORMAT

DRT 1.1, 1.2, and 1.3

DOMAIN: SALES PROMOTION

Subtasks: Establishing Purpose
Setting up the Meeting
Finalizing the Meeting

Content Limits

See Data Sheet B, Sections I, II, and III.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

A description of a line of merchanidse to be promoted at a meeting.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

Making a plan for a meeting that promotes the line of merchandise presented to him. Including the following:

1. Audience to be reached
2. General theme
3. Location
4. Time and date
5. Estimated cost
6. Meal or refreshments
7. Gifts or door prizes
8. Speaker or entertainment
9. Sales promotion techniques
10. Tentative meeting agenda
11. Advertisement strategy
12. Follow-up procedures

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, and 1.3

DOMAIN: SALES PROMOTION

For this test you will be required to perform the following:

Plan a meeting to promote the line of merchanidse that is presented to you. Including the following:

1. Audience to be reached
2. General theme
3. Location
4. Time and date
5. Estimated cost
6. Meal or refreshments
7. Gifts or door prizes
8. Speaker or entertainment
9. Sales promotion techniques
10. Tentative meeting agenda
11. Advertising strategy
12. Follow-up procedures.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, and 1.3

DOMAIN: SALES PROMOTION

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Selected audience to be reached.
		2. Selected general theme of meeting.
		3. Choose suitable location.
		4. Set suitable meeting date and time.
		5. Estimated cost of meeting.
		6. Planned for meal or refreshments.
		7. Planned for gifts or door prizes.
		8. Planned for speaker or entertainment.
		9. Organized sales promotion techniques.
		10. Set tentative meeting agenda.
		11. Planned for advertising of meeting.
		12. Planned follow-up procedures.

A* = Acceptable
U = Unacceptable

DOMAIN: MACHINERY PURCHASE

TASK: Select and Purchase Machinery and Equipment

PERFORMANCE OBJECTIVE

Given a decision to purchase new machinery or equipment for a business, select and purchase the item or items. All checklist items will be rated acceptable.

PERFORMANCE GUIDE

1. Determine the specific price of the machinery or equipment.
2. Determine what size machinery or equipment the business needs.
3. Determine the price range of the machinery or equipment by the necessity of the item and its potential value to the business.
4. Examine and price the equipment or machinery at several different sellers.
5. Observe equipment in operation or conduct a field test.
6. Select and buy according to price and quality.

DOMAIN: MACHINERY PURCHASE

TASK: Select and Purchase Machinery and Equipment

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Gathered specifications and prices of machinery and equipment deemed suitable.
		2. Performed cost analysis projection to determine the cost effectiveness of the purchase in terms of size or capacity.
		3. Obtained prices for the chosen item from various dealers.
		4. Selected best "Buy."
		5. Completed purchase.

A* = Acceptable
U = Unacceptable

TASK ANALYSIS

DOMAIN: MACHINERY PURCHASE

I. Task Statement: Select and Purchase Machinery and Equipment.

II. Task Performance Cue(s): Supervisor asks you to select and purchase machinery and equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Plan an income and expense projection for each major piece of equipment to determine profitablity of the purchase.			2	
2. Measure efficiency of equipment use compared to other businesses of same type.			3	
3. Is more machinery and/or equipment needed?	4	EOT		
4. Determine the specific price needed.			5	
5. Has the capacity or size of machinery been determined?	7	6		
6. Decide what particular size your business needs.			7	
7. Has a price range been set?	9	8		
8. Determine price range by the necessity of the item and its potential value to the business.			5	
9. Examine and price the piece at several different sellers.			10	
10. Select and buy according to price and quality.			EOT	

DOMAIN: MACHINERY PURCHASE

TASK: Select and Purchase Machinery and Equipment

Generalizable to the Machinery Purchase Domain	Generalizable to the Select and Purchase Machinery and Equipment Task	Transferrable to the Machinery Purchase Domain	Transferrable to the Select and Purchase Machinery and Equipment Task
ST #1 Determining Company Needs Learning Content: Rules for determining profitability of purchase.		ST #1 Determining Company Needs Learning Content: 1. Plan an income and expense projection for each piece of equipment or machinery. 2. Measure efficiency of equipment or machinery in relation to other similar businesses. 3. Determine what equipment or machinery is needed. 4. Determine the size and capacity of equipment or machinery needed. 5. Determine price range.	

DOMAIN: MACHINERY PURCHASE

TASK: Select and Purchase Machinery and Equipment (Continued)

ST #2		ST #2	
Comparing and Selecting		Comparing and Selecting	
Learning Content:		Learning Content:	
Rules for selecting the best "Buy."		1. Review catalogues or bids.	
		2. Examine for quality and obtain price from several sellers.	
		3. Select and buy according to quality and price range.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: MACHINERY PURCHASE

Section I. Select and Purchase Machinery and Equipment.

- A. Planning income expense projection.
- B. Comparing efficiency with other similar companies.
- C. Determining needs.
- D. Determining size and capacity.
- E. Determining price range.

Section II. Comparing and Selecting

- A. Review of catalogue or bids.
- B. Examination for quality and price.
- C. Selection and purchase.

PLANNING FORMAT

DRT 1.1 and 1.2

DOMAIN: MACHINERY PURCHASE

Subtasks: Determining Company Needs
Comparing and Selecting

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Machinery and equipment catalogues.
2. List and description of machinery and equipment needed by a company.

Test Response Characteristics

The student will demonstrate an understanding of the concepts and principles, and practices involved in:

1. Examining machinery and equipment catalogues to find the price range of equipment and machinery needed.
2. Making recommendations for the best "Buys" available.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 1.2

DOMAIN: MACHINERY PURCHASE

For this test you will be required to perform the following:

1. Examine machinery and equipment catalogues to find the price range of equipment and machinery needed by a company.
2. Make recommendations for the best "Buys" available.

DOMAIN: GRAIN GRADING

TASK 1: Grade Corn

PERFORMANCE OBJECTIVE

Given a sample of corn, grade it to the United States Department of Agriculture standards for corn.

PERFORMANCE GUIDE

1. Obtain Federal Grading Standards for corn.
2. Determine class of sample.
3. Run the test weight of the corn.
4. Test corn for moisture.
5. Check corn for cracked kernels and foreign matter.
6. Check corn for heat damage
7. Check for any other observable damage and total damage.
8. Check for any stones or cinders.
9. Check corn for musty, sour, heating or hot condition.
10. Check corn for commercially objectionable foreign odor.
11. Check corn for distinctly low quality.
12. Check corn for weevils.
13. Grade corn to its standard.

DOMAIN: GRAIN GRADING

TASK 2: Grade Soybeans

PERFORMANCE OBJECTIVE

Given a sample of soybeans, grade it to the United States Department of Agriculture standards for soybeans.

PERFORMANCE GUIDE

1. Obtain Federal Grading Standards for soybeans.
2. Determine the class for soybeans.
3. Run test weight of the soybeans.
4. Test soybeans for moisture.
5. Check soybeans for splits.
6. Check soybeans for total damage.
7. Check soybeans for heat damage.
8. Check soybeans for foreign material.
9. Check soybeans for other classes of soybenas.
10. Check soybeans for stones or cinders.
11. Check soybeans for purple mottling or stains.
12. Check soybeans for materially weathered.
13. Check soybeans for garlic.
14. Check soybeans for weevils.
15. Grade soybeans to their standards.

DOMAIN: GRAIN GRADING

TASK 3: Grade Wheat

PERFORMANCE OBJECTIVE

Given a sample of wheat, grade it to the United States Department of Agriculture standards for wheat.

PERFORMANCE GUIDE

1. Obtain Federal Grading Standards for wheat.
2. Determine the class of wheat.
3. Determine dockage.
4. Determine foreign material.
5. Determine total damage.
6. Check wheat for heat damage.
7. Check wheat for other grain.
8. Check wheat for contrasting classes.
9. Check wheat for shrunken and broken kernels.
10. Check wheat for stones and cinders.
11. Determine total defects.
12. Run test weight for wheat.
13. Check wheat for smut.
14. Check wheat for garlic.
15. Check wheat for weevils.
16. Check wheat for ergot.
17. Check wheat for distinctly low quality.
18. Check wheat for commercially objectionable odor.
19. Check wheat for musty, sour or heating.
20. Grade wheat to its federal standards.

TASK ANALYSIS

DOMAIN: GRAIN GRADING

I. Task 1: Grade Corn

II. Task Performance Cue(s): Customer brings in corn to sell.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Obtain proper sample.			2	
2. Measure and record test weight.			3	
3. Measure and record moisture content.			4	
4. Correct test weight for moisture.			5	
5. Measure and record the percentage of broken corn and foreign material.			6	
6. Measure and record the percentage of heat damaged corn.			7	
7. Measure and record the percentage of total damage in the sample.			8	
8. Are there any stones in the sample?	9	12		
9. Are there more than 7 stones or .2 percent of stones in the sample?	10	12		
10. Grade the sample US Sample grade.			11	
11. Clean up and store equipment.			EOT	
12. Does the sample contain any factor such as musty, sour, heating or hot or commercially objectional foreign odor?	10	13		
13. Does the sample contain any defects making it of low quality?	10	14		
14. Does the sample contain 2 or more live weevils or 1 weevil and 5 other live insects injurious to corn or 15 live insects injurious to corn?	15	16		

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
15. Add the term weevily to the number grade.			16	
16. Does the sample meet minimum standards for US No. 1 corn?	17	18		
17. Grade the sample US No. 1.			11	
18. Does the sample meet minimum standards for US No. 2 corn?	19	20		
19. Grade the corn US No. 2.			11	
20. Does the sample meet minimum standards for US No. 3 corn?	21	22		
21. Grade the corn US No. 3.			11	
22. Does the sample meet minimum standards for US No. 4 corn?	23	24		
23. Grade the corn US No. 4.			11	
24. Does the sample meet minimum standards for US No. 5 corn?	25	10		
25. Grade the corn US No. 5.			11	

TASK ANALYSIS

DOMAIN: GRAIN GRADING

I. Task 2: Grade Soybeans

II. Task Performance Cue(s): Customer brings in soybeans to sell

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Obtain a suitable sample.			2	
2. Measure and record test weight.			3	
3. Measure and record moisture content.			4	
4. Correct test weight for moisture if needed.			5	
5. Measure and record the percentage of splits.			6	
6. Measure and record the percentage of damaged kernels.			7	
7. Measure and record the percentage of heat damaged kernels.			8	
8. Measure and record the percentage of foreign material.			9	
9. Measure and record the percentage of brown, black and/or bi-colored beans.			10	
10. Are there any stones in the sample?	11	14		
11. Are there more than seven stones or over .2 percent by weight in the sample?	12	14		
12. Grade the sample, US Sample grade.			13	
13. Clean up and put away equipment.			EOT	
14. Are there purple mottled or stained beans in the sample?	15	17		

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
15. Does the sample meet all other requirements of US No 3 Soybeans?	16	17		
16. Grade the sample US No. 3.			13	
17. Are the beans materially weathered?	18	20		
18. Does the sample otherwise meet standards for US No. 4?	19	20		
19. Grade the sample US No. 4.			13	
20. Do the soybeans contain five or more garlic bulblets in 1000 grams?	21	22		
21. Add the term Garlicky to the grade name.			22	
22. Does the sample contain two or more live weevils, one weevil and 5 other insects injurious to soybeans or 15 other insects injurious to soybeans in the sample?	23	24		
23. Add the term Weevily to the grade name.			24.	
24. Does the sample meet the requirements for US No. 1?	25	26		
25. Grade the sample US No. 1.			13	
26. Does the sample meet the requirements for US No. 2?	27	28		
27. Grade the sample US No. 2.			13	
28. Does the sample meet the requirement for US No. 3?	29	30		
29. Grade the sample US No. 3			13	
30. Does the sample meet the requirements for US No. 4?	31	32		
31. Grade the sample US No. 4.			13	
32. Grade the sample US Sample grade.			13	

TASK ANALYSIS

DOMAIN: GRAIN GRADING

I. Task 3: Grade Wheat

II. Task Performance Cue(s): Customer brings in wheat to sell.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Obtain suitable sample.			2	
2. Measure and record test weight.			3	
3. Measure and record moisture content.			4	
4. Is moisture content 13.5 percent or less?	6	5		
5. Correct test weight to 13.5 percent.			6	
6. Measure and record percentage dockage rounded down to the nearest one-half percent.			7	
7. Measure and record the percentage of shrunken and broken kernels.			8	
8. Measure and record the percentage of foreign material.			9	
9. Measure the percentage of damaged kernels in the sample.			10	
10. Measure the percentage of heat damaged kernels.			11	
11. Add the percentage of damaged and heat damaged kernels and record.			12	
12. Does the sample contain stones?	13	14		
13. Does the sample contain more than 7 stones exceeding .2 percent of sample weight?	24	14		
14. Add and record the percentage of total defects.			15	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
15. Does the sample contain, smut garlic, weevils or insects?	16	19		
16. Determine if a special grade designation is required.			17	
17. Does the wheat meet minimum standards for US No. 1?	25	19		
18. Clean up and put away equipment.			EOT	
19. Does the wheat meet miminum standards for US No. 2?	25	20		
20. Does the wheat meet minimum standards for US No. 3?	25	21		
21. Does the wheat meet minimum standards for US No. 4?	25	22		
22. Does the wheat meet minimum standards for US No. 5?	25	23		
23. Grade the wheat US ample grade.			18	
24. Does any special grade name apply?	25	18		
25. Add the special grade name to the grade and record the grade.			18	

DOMAIN: GRAIN GRADING

TASK 1: Grade Corn

Generalizable to the Grain Grading Domain	Generalizable to the Grade Corn Task	Transferrable to the Grain Grading Domain	Transferrable to the Grade Corn Task
ST #1		ST #1	
Obtain Sample		Obtain Sample	
Learning Content:		Learning Content:	
Rules for sampling.		Take sample.	
ST #2	ST #2	ST #2	ST #2
Sample Analysis	Sample Analysis	Sample Analysis	Sample Analysis
Learning Content:	Learning Content:	Learning Content:	Learning Content:
Rules for evaluating grain samples.	Rules for evaluating corn sample.	1. Take test weight. 2. Measure moisture. 3. Look for heat damage. 4. Look for damaged kernels. 5. Look for total damage. 6. Look for foreign material. 7. Look for stones. 8. Look for weevils and insects.	1. Measure broken corn. 2. Identify sample grade factors. 3. Identify corn classes. 4. Assign grade names.
ST #3		ST #3	
Clean-up		Clean-up	
Learning Content:		Learning Content:	
Rules for cleaning up the work area.		1. Clean up the work space and equipment. 2. Store grading equipment in proper place.	

DOMAIN: GRAIN GRADING

TASK 2: Grade Soybeans

Generalizable to the Grain Grading Domain	Generalizable to the Grade Soybeans Task	Transferrable to the Grain Grading Domain	Transferrable to the Grade Soybeans Task
ST #1 Obtain Sample Learning Content: Rules for sampling.		ST #1 Obtain Sample Learning Content: Take sample.	
ST #2 Sample Analysis Learning Content: Rules for evaluating grain samples.	ST #2 Sample Analysis Learning Content: Rules for evaluating soybean sample.	ST #2 Sample Analysis Learning Content: 1. Take test weight 2. Measure moisture. 3. Look for heat damage. 4. Look for damaged kernels. 5. Look for total damage. 6. Look for foreign material. 7. Look for stones. 8. Look for weevils and insects.	ST #2 Sample Analysis Learning Content: 1. Measure splits. 2. Identify sample grade factors. 3. Identify soybean classes. 4. Assign grade names.
ST #3 Clean-up Learning Content: Rules for clearing up the work area.		ST #3 Clean-up Learning Content: 1. Clean up the work space and equipment. 2. Store grading equipment in proper place.	

DOMAIN: GRAIN GRADING

TASK 3: Grade Wheat

Generalizable to the Grain Grading Domain	Generalizable to the Grade Wheat Task	Transferrable to the Grain Grading Domain	Transferrable to the Grade Wheat Task
ST #1 Obtain Sample Learning Content Rules for sampling		ST #1 Obtain Sample Learning Content: Take Sample.	
ST #2 Sample Analysis Learning Content: Rules for evaluating grain samples	ST #2 Sample Analysis Learning Content: Rules for evaluating wheat samples.	ST #2 Sample Analysis Learning Content: 1. Take test weight. 2. Measure moisture. 3. Look for heat damage. 4. Look for damaged kernels. 5. Look for total damage. 6. Look for foreign material. 7. Look for stones. 8. Look for weevils and insects.	ST #2 Sample Analysis. Learning Content: 1. Measure shrunken and broken kernels. 2. Identify sample grade factors. 3. Identify other classes of wheat. 4. Measure total defects. 5. Determine dockage. 6. Identify other grains. 7. Assign grade names.
ST #3 Clean-up Learning Content: Rules for cleaning up the work area.		ST #3 Clean-up Learning Content: 1. Clean up the work space and equipment. 2. Store grading equipment in proper place.	

DATA SHEET A

CONTENT LIMITS

DOMAIN: GRAIN GRADING

Section I. Grade Corn

Sample Analysis

1. Cracked or broken kernels
2. Sample grade factors
   a. Commercially objectionable odor
   b. sour
   c. musty
   d. heating or hot
   e. excessive moisture
   f. distinctly low quality
3. Classes of corn
   a. yellow
   b. white
   c. mixed
4. Grade names
   a. US no. 1
   b. US no. 2
   c. US no. 3
   d. US no. 4
   e. US no. 5
   f. US sample grade
5. Special grades
   a. weevily
   b. flint
   c. flint and dent

Section II. Grade Soybeans

Sample Analysis

1. Splits
2. Classes of soybeans
   a. yellow
   b. green
3. Sample grade factors
   a. musty
   b. sour
   c. heating or hot
   d. excessive moisture
   e. distinctly low quality

4. Grade names
    a. US no. 1
    b. US no. 2
    c. US no. 3
    d. US no. 4
    e. US sample grade
5. Special grades
    a. weevily
    b. purple mottled or stained
    c. garlic
    d. materially weathered

Section III. Grade Wheat

Sample Analysis
1. Shrunken or broken kernels
2. Total defects
3. Other classes of wheat
4. Dockage
5. Other grain
6. Ergot
7. Sample grade factors
    a. musty
    b. sour
    c. heating
    d. excessive moisture
    e. distinctively low quality
    f. excessive smut
    g. stones, glass, crotelaria seeds, castor beans, unknown or harmful particles, animal filth, or objectionable odor
8. Grade names
    a. US no. 1
    b. US no. 2
    c. US no. 3
    d. US no. 4
    e. US no. 5
    f. US sample grade
9. Special grades
    a. light smutty
    b. smutty
    c. light garlicky
    d. garlicky
    e. weevily
    f. ergoty

DATA SHEET B

CONTENT LIMITS

DOMAIN: GRAIN GRADING

Section I. Obtaining Samples

- A. Sampling Methods
- B. Sampling Locations
- C. Mixing Sample

Section II. Sample Analysis

- A. Grading Factors
  - 1. Test weight
  - 2. Moisture test
  - 3. Heat damage
  - 4. Damaged kernels
  - 5. Foreign matter
  - 6. Total damage
  - 7. Stones
  - 8. Weevils and other injurious insects

Section III. Clean-Up

- A. Cleaning Work Area and Grading Equipment
- B. Equipment Storage

PLANNING FORMAT

DRT 1.1, 2.1, and 3.1

DOMAIN: GRAIN GRADING

Subtask: Obtaining Samples

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies.

1. Suitable grain probe
2. Sample bucket
3. A load of corn, soybeans or wheat to sample.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

Obtaining a representative grain sample.

EXAMINEE INSTRUCTIONS

DRT 1.1, 2.1, and 3.1

DOMAIN: GRAIN GRADING

For this test you will be required to perform the following:

1. Take a representative sample.
2. Mix the required amount from the sample.

PERFORMANCE CHECKLIST

DRT 1.1, 2.1, and 3.1

DOMAIN: GRAIN GRADING

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Sampled from at least five locations.
		2. Mixed the samples and measured the required sample size.
		3. Properly identified the sample and dated it.
		4. Cleaned and put away equipment.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.2, 1.3, 2.2, 2.3, 3.2, and 3.3

DOMAIN: GRAIN GRADING

Subtasks: Sample Analysis

Clean-Up

Content Limits

See Data Sheet A, Sections I, II, and III.
See Data Sheet B, Sections II and III

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Federal grain grading standards.
2. Equipment for determining test weight.
3. Equipment for determining moisture content.
4. Corn, soybean, or wheat samples.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Measuring test weight of a grain sample.
2. Measuring moisture content of a grain sample.
3. Grading grain samples.
4. Assigning special grade names.
5. Cleaning up work area and storing equipment.

EXAMINEE INSTRUCTIONS

DRT 1.2, 1.3, 2.2, 2.3, 3.2, and 3.3

DOMAIN: GRAIN GRADING

For this test you will be required to perform the following:

1. Measure test weight of a grain sample.
2. Measure moisture content of a grain sample.
3. Determine grade of grain sample.
4. Assign any special grade name if required.
5. Clean up work area and store equipment.

PERFORMANCE CHECKLIST

DRT 1.2, 1.3, 2.2, 2.3, 3.2, and 3.3

DOMAIN: GRAIN GRADING

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Determined correct test weight.
		2. Determined correct moisture content.
		3. Corrected test weight for moisture.
		4. Determined accurately and recorded factors in grading as appropriate.
		5. Determined and recorded factors for assigning sample grade.
		6. Determined and recorded any special grade name.
		7. Assigned proper grade to grain sample.
		8. Cleaned up work area and equipment.
		9. Properly stored grading equipment.

A* = Acceptable
U = Unacceptable

DOMAIN: MOISTURE TESTING GRAIN

TASK: Test Grain for Moisture

PERFORMANCE OBJECTIVE

Given a representative sample of grain, make a moisture test. The test must be accurate to five one hundredths of one percent and all checklist items will be rated acceptable.

PERFORMANCE GUIDE

1. Determine if more than one sample of grain is needed.
2. Take a representative sample.
3. Mix sample.
   a. Determine if sample is to be electronically tested.
   b. Determine if sample is to be mechanically tested.
4. Fill tester.
   a. Set tester to test grain.
   b. Determine the moisture content reading.
5. Determine temperature.
6. Determine moisture content of sample from tables.

DOMAIN: MOISTURE TESTING GRAIN

TASK: Test Grain for Moisture

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Obtained proper equipment.
		2. Determined if more than one sample was needed.
		3. Took a representative sample.
		4. Mixed the sample.
		5. For electronic testing:
		a. Filled tester with proper sample.
		b. Set tester to test grain.
		c. Recorded weight, temperature, and moisture.
		6. For mechanical testing:
		a. Determined the test weight.
		b. Determined grain temperature.
		c. Determined the moisture content.
		d. Determined the correct moisture content from the chart.

A* = Acceptable
U = Unacceptable

TASK ANALYSIS

DOMAIN: MOISTURE TESTING GRAIN

I. Task Statement: Test Grain for Moisture.

II. Task Performance Cue(s): Truck on scale with grain.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Secure equipment.			2	
2. Is more than one sample needed?	3	4		
3. Take representative sample.			4	
4. Mix sample.			5	
5. Is the testing electronic?	14	6		
6. Is the testing mechanical?	7	5		
7. Determine the test weight.			8	
8. Determine the grain temperature.			9	
9. Determine the moisture content.			10	
10. Determine corrected moisture content from chart.			11	
11. Determine discounts.			12	
12. Adjust price and record with date.			13	
13. Distribute weigh tickets.			EOT	
14. Fill tester.			15	
15. Set tester to test grain.			16	
16. Record weight, temperature and moisture.			13	

DOMAIN: MOISTURE TESTING GRAIN

TASK: Test Grain for Moisture

Generalizable to all Tasks in the Moisture Testing Grain Domain	Generalizable to the Test Grain for Moisture Task	Transferrable to all Tasks in the Moisture Testing Grain Domain	Transferrable to the Test Grain for Moisture Tasks
ST #1 Collecting Test Materials Learning Content: 1. Rules for obtaining proper equipment 2. Rules for taking a grain sample		ST #1 Collecting Test Materials Learning Content: 1. Obtain proper equipment. 2. Obtain a grain sample.	
ST #2 Testing Grain Learning Content: 1. Rules for testing with electronic equipment 2. Rules for testing with mechanical equipment 3. Rules for analyzing moisture content.		ST #2 Testing Grain Learning Content: 1. Electronically test grain. 2. Mechanically test grain. 3. Analyze moisture content data.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: MOISTURE TESTING GRAIN

Section I. Collecting Test Materials

- A. Obtaining Proper Equipment
  - 1. Electronic
  - 2. Mechanical
- B. Obtaining Grain Sample
  - 1. Multiple sampling
  - 2. Representative sampling
  - 3. Mixing procedures

Section II. Testing Grain

- A. Electronic Testing
  - 1. Filling tester
  - 2. Adjusting tester controls
  - 3. Reading results
- B. Mechanical Testing
  - 1. Determining test weight
  - 2. Measuring temperature
  - 3. Determining moisture content
  - 4. Determining corrected moisture from chart
- C. Analyzing Moisture Content
  - 1. Determining moisture discount
  - 2. Determining adjusted price
  - 3. Distributing tickets

PLANNING FORMAT

DRT 1.1 and 1.2

DOMAIN: MOISTURE TESTING GRAIN

Subtasks: Collecting Test Material
Testing Grain

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Grain sampling tools.
2. Electronic grain tester.
3. Mechanical testing equipment.
4. Forms for recording results.
5. Price and moisture discount information.
6. Chart for reading correct moisture.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Obtaining a grain sample to be used for moisture testing.
2. Moisture testing with electronic equipment.
3. Moisture testing with mechanical equipment.
4. Analyzing moisture content results.
5. Completing and distributing tickets.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 1.2

DOMAIN: MOISTURE TESTING GRAIN

For this test you will be required to perform the following:

1. Obtain a representative grain sample to be used for moisture testing.
2. Carry out a moisture test using electronic tester.
3. Carry out a moisture test using mechanical equipment.
4. Determine moisture discount.
5. Determine adjusted price due to moisture.
6. Filling out ticket and distributing copies.

PERFORMANCE CHECKLIST

DRT 1.1 and 1.2

DOMAIN: MOISTURE TESTING GRAIN

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Used multiple sampling.
		2. Mixed samples.
		3. Obtained representative sample.
		4. Filled electronic tester correctly.
		5. Adjusted controls accurately.
		6. Read results accurately.
		7. Determined mechanical test weight accurately.
		8. Measured mechanical temperature accurately.
		9. Determined correct mechanical moisture content.
		10. Corrected moisture from chart.
		11. Determined moisture discount.
		12. Determined adjusted price.
		13. Distributed copies of ticket.

A* = Acceptable
U = Unacceptable

DOMAIN: FORMULATE FEEDING RATIONS

TASK: Formulate Feeding Rations

PERFORMANCE OBJECTIVE

Given an animal type and size, formulate a balanced feed ration for the animal. Upon completion, all processes on the performance checklist will be rated acceptable and feed ration will be formulated.

PERFORMANCE GUIDE:

1. Identify size and type of animal.
2. Use reference to determine nutritional requirements.
3. Use reference method for balancing the ration for the particular animal.
4. Find most economical and practical ration.

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TASK ANALYSIS

DOMAIN: FORMULATE FEED RATIONS

I. Task Statement: Formulate Feed Ration

II. Task Performance Cue(s): 1. Supervisor asks you to formulate feed rations. 2. Customer asks you to formulate feed rations.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	Nc		
1. Identify size and type of animal.			2	
2. Record nutrient requirements of protein and TDN			3	
3. Note nutrient sources available to use in ration.			4	
4. Will pasture be used in the ration?	5	6		
5. Estimate nutrients gained from the pasture.			6	
6. Will dry roughage or silage be used in the ration?	7	9		
7. Determine amount fed per day.			8	
8. Calculate TDN and protein contained in roughage.			9	
9. Determine TDN and protein to be supplied by grain and concentrates.			10	
10. Estimate amount of grain needed to supply most of the TDN needed.			11	
11. Calculate amount of protein concentrate needed to supply protein needed.			12	
12. Does TDN fall within requirements?	13	10		
13. Does quality of protein match animals amino acid requirements?	14	16		

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
14. Can ration cost be reduced by using different proportions of feeds or by changing feeds?	10	15		
15. Report ration to supervisor or customer.			EOT	
16. Use other protein sources.			11	

DOMAIN: FORMULATE FEEDING RATIONS

TASK: Formulate Feeding Rations

Generalizable to all Tasks in Formulating Feeding Rations Domain	Generalizable to the Formulate Feeding Rations Task	Transferrable to all Tasks in Formulate Feeding Rations Domain	Transferrable to the Formulate Feeding Rations Task
ST #1 Requirements Learning Content: Rules for determining nutrient requirment.		ST #1 Requirements Learning Content: 1. Identify size and type of animal. 2. Identify nutritional requirements.	
ST #2 Balancing Ration Learning Content: Rules for balancing the ration.		ST #2 Balancing the Ration Learning Content: 1. Calculate nutrients from any roughages or pasture. 2. Estimate nutrients from grain and concentrate. 3. Determine balance to meet requirements.	
ST #3 Obtaining Least-Cost Ration Rules for obtaining least cost ration.		ST #3 Obtaining Least-Cost Ration Calculate cost of alternative rations.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: FORMULATE FEEDING RATIONS

Task: Formulate Feed Rations

Section I. Requirements

- A. Nutrients
  - 1.TDN
  - 2.Protein
- B. Animals
  - 1.Swine
  - 2.Beef
  - 3.Dairy
  - 4.Sheep

Section II. Balancing Ration

- A. Feed Stuffs
  - 1. Pastures
    - a. bluegrass
    - b. alfalfa
    - c. orchard grass
    - d. sudex
    - e. bluegrass and trefoil
  - 2. Roughages
    - a. alfalfa
    - b. timothy
    - c. silage
    - d. clover
    - e. sweet clover
    - f. orchard grass
    - g. clover timothy
    - h. alfalfa brome grass
  - 3. Grain
    - a. corn
    - b. oats
    - c. wheat
    - d. barley
    - e. soybeans

4. Supplements
    a. soybean oil meal
    b. linseed oil meal
    c. wheat bran
    d. commercial proteins

Section III. Least Cost Rations

1. Cost per unit of protein

2. Cost per unit of TDN

3. Feed conversion ratios

PLANNING FORMAT

DRT 1.1, 1.2, and 1.3

DOMAIN: FORMULATE FEEDING RATIONS

Subtasks: Requirements
Balancing the Ration
Least Cost Ration

Content Limits

See Data Sheet B, Section I, II, and III

Test Stimulus Characteristics

The students will be provided the following data, material, and supplies:

1. Nutrient requirement tables.
2. Nutrient content tables for feed stuffs.
3. Current feed stuffs price lists.
4. Information concerning animal to be used in balancing the ration.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Determining nutrient requirements for a given class of animals.
2. Developing a balanced ration.
3. Developing an economic ration by providing a balanced least cost ration to fit the animal provided.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, and 1.3

DOMAIN: FORMULATE FEEDING RATIONS

For this test you will be required to perform the following:

1. Use a feed stuffs table of nutrients.
2. Use a nutrient table of animal requirements.
3. Develop a balanced ration for a given animal.
4. Develop a least cost ration for a given animal.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, and 1.3

DOMAIN: FORMULATE FEEDING RATIONS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Properly determined animals nutrient requirements.
		2. Calculated a balanced ration.
		3. Developed a practical and economical ration.

A* = Acceptable
U = Unacceptable

DOMAIN: APPLY FOR WEIGHING LICENSE

TASK: Apply for Weighing License

PERFORMANCE OBJECTIVE

Given the job responsibility of weighing, apply for a weighing license. Upon completion, a weighing license application will be approved by the licensing authority.

PERFORMANCE GUIDE

1. Write to the state agency that is responsible for weights and measures to obtain weighing license application form.
2. Fill out application and return to the state licensing authority.

TASK ANALYSIS

DOMAIN: APPLY FOR WEIGHING LICENSE

I. **Task Statement: Apply for Weighing License**

II. **Task Performance Cue(s):** Job requires that you have a weighing license.

III. **Task Performance Procedures:**

A. **When a decision must be made, indicate alternatives as "Yes-No" answers to questions.**
B. **List performance steps by most frequently occurring sequence.**

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Are you required to have a weighing license?	2	EOT		
2. Write to the State Board of Health, Division of Weights and Measures, asking for a weighing license application.			3	
3. Await reply.			4	
4. If no reply in 2-4 weeks, repeat procedure or call the Weights and Measures Division.			5	
5. Complete application and submit to division of weights and measures.			EOT	

DOMAIN: APPLY FOR WEIGHING LICENSE

TASK: Apply for Weighing License

Generalizable to all Tasks in Apply for Weighing License Domain	Generalizable to the Apply for Weighing License Task	Transferrable to all Tasks in Apply for Weighing License Domain	Transferrable to the Apply for Weighing License Task
ST #1 Weighing License		ST #1 Weighing License	
Learning Content:		Learning Content:	
1. Rules for determining of license is required.		1. Check state and local requirements for licensing.	
2. Rules for requesting application.		2. Write letter to licensing agency requesting application.	
3. Rules for completing application.		3. Complete application.	
4. Rules for mailing application.		4. Return application to licensing agency complete with fees.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: APPLY FOR WEIGHING LICENSE

Section I. Apply for Weighing License

Weighing License

1. Scale operator requirements
   - a. state
   - b. local
2. Obtaining license application
   - a. letter
   - b. telephone
3. Completing the application
   - a. information
   - b. fee
4. Follow-up
   - a. mail
   - b. telephone

PLANNING FORMAT

DRT 1.1

DOMAIN: APPLY FOR WEIGHING LICENSE

Subtask: Weighing License

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Copy of federal, state, local, and company rules concerning licensing.
2. Addresses of licensing agencies.
3. Sample application form.
4. Stationary and envelopes.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Reading and interpreting federal, state, local, and company rules concerning licensing.
2. Writing a sample letter of request to a licensing agency.
3. Filling out a sample application for licensing.
4. Preparing the application for mailing.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: APPLY FOR WEIGHING LICENSE

For this test you will be required to perform the following:

1. Read and interpret a copy of federal, state, local, and company rules concerning licensing.
2. Write a sample letter of request to a licensing agency.
3. Fill out a sample application for licensing.
4. Prepare the application for mailing.

DOMAIN: CHEMICAL TESTING

TASK: Test Chemicals for Specific Application (Test Plots)

PERFORMANCE OBJECTIVE

Given a test plot area, conduct a test of chemical effectiveness using randomization, replications and controls to provide validity.

PERFORMANCE GUIDE

1. Assign chemicals to be tested a random number.
2. Diagram the test plot area into random blocks.
3. Assign treatment and control areas.
4. Prepare the ground for planting.
5. Prepare equipment for planting.
6. Plant crop.
7. Provide for control of factors other than chemical used and rate.
8. Apply chemicals to be tested at correct time and rate.
9. Observe test plots at certain time intervals to gather information and observations about the test plot results.
10. Transfer collected data to tables clearly showing comparison of results.
11. Analyze the data as to the best-worst chemical in relation to the reuslts.
12. Publish results if worthy and valid.

TASK ANALYSIS

DOMAIN: CHEMICAL TESTING

I. Task Statement: Test Chemicals for Specific Application.

II. Task Performance Cue(s): Asked by employer to test chemicals for specific application

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Have you secured the ground for test plots?	3	2		
2. Secure test plot ground.			3	
3. Have you secured the equipment for test plot?	5	4		
4. Secure equipment for test plot.			5	
5. Have you secured the seed for test plots?	7	6		
6. Secure seed for test plot.			7	
7. Make a list of chemicals to be tested.			8	
8. Make a diagram showing the rows of crops to be tested for each chemical.			9	
9. Prepare the ground for planting.			10	
10. Prepare equipment for planting.			11	
11. Plant crop.			12	
12. Apply chemicals at correct time and rate.			13	
13. Observe test plots at certain time intervals (weekly, every three days).			14	
14. Gather information and observations about the test plot results.			15	
15. Transfer data to tables clearly showing comparison of results.			16	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
16. Analyze the data as to best-worse chemical in relation to findings.			17	
17. Publish results if worthy and valid.			EOT	

DOMAIN: CHEMICAL TESTING

TASK: Test Chemicals for Specific Application

Generalizable to the Chemical Testing Domain	Generalizable to the Test Chemicals for Specific Application Task	Transferrable to the Chemical Testing Domain	Transferrable to the Test Chemicals for Specific Application Task
ST #1		ST #1	
Planning the Test Plot		Planning the Test Plot	
Learning Content:		Learning Content:	
1. Rules for obtaining necessary materials.		1. Secure land for test plot.	
2. Rules for setting up the test plot.		2. Obtain cultivation and chemical application equipment.	
		3. Obtain seed.	
		4. Make a list of the chemicals and rates to be tested.	
		5. Obtain chemicals.	
		6. Draw a diagram of the test plot.	
		7. Assign chemicals and test plots random numbers.	
		8. Make provision for a "Control" plot.	
ST #2		ST #2	
Performing the Test		Performing the Test	
Learning Content:		Learning Content:	
Rules for performing the test		1. Prepare the ground for planting.	
		2. Prepare equipment for planting	
		3. Calibrate planter	

DOMAIN: CHEMICAL TESTING

TASK: Test Chemicals for Specific Application (Continue

		4. Plant crop. 5. Prepare chemical application. 6. Calibrate chemical application. 7. Apply chemicals.	
ST #3 Collecting and Analyzing Results Learning Content: 1. Rules for collecting results. 2. Rules for analyzing data.		ST #3 Collecting and Analyzing Results Learning Content: 1. Observe test plots at certain time intervals 2. Record observations and comparative information about the test plots. 3. Transfer data to tables and graphs. 4. Analyze data and interpret results. 5. Publish results if accurate and significant.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: CHEMICAL TESTING

Section I. Planning the Test Plot

- A. Obtaining Necessary Materials
    1. Suitable site
    2. Cultivation and application equipment
    3. Seed
    4. Chemicals
- B. Setting up the Test Plot
    1. Listing chemicals and rates to be tested.
    2. Drawing a diagram of the test plots.
    3. Assigning test plots and chemicals random numbers.
    4. Making provision for a "Control" plot.

Section II. Performing the Test

- A. Preparing Ground for Planting
- B. Preparing Equipment for Planting
- C. Calibrating Planter
- D. Planting Crop
- E. Preparing Chemical Applicator
- F. Calibrating Chemical Applicator
- G. Apply Chemicals

Section III. Collecting and Analyzing Results

- A. Collecting Results
    1. Observation at regular intervals
    2. Recording of observations and comparative information.
- B. Analyzing the Data
    3. Transferring data to tables and graphs
    4. Evaluating data and interpreting results
    5. Publishing results

PLANNING FORMAT

DRT 1.1, 1.2, and 1.3

DOMAIN: CHEMICAL TESTING

Subtasks: Planning the Test Plot
Performing the Test
Collecting and Analyzing Results

Content Limits

See Data Sheet B, Sections I, II, and III.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. A list of chemicals and the rates that are to be comparatively tested in a test plot.
2. A site suitable for the test plot trials.
3. Data from a simulated test plot trial.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Planning a chemical test plot trial for the chemicals and rates supplied to him. The plan will include the following:
    a. a list of the chemicals and rates to be tested
    b. a diagram of the test plots
    c. random number assignments for chemicals and test plots
    d. provision in plan for a "Control" portion of the plot
    e. a description of planting procedures
    f. a description of chemical application procedures
    g. Procedures and schedules for data collection
2. Analyzing and interpreting data from a previous trial
    a. transferring raw data to a table or graph
    b. interpreting the results of the trial and making recommendations.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, and 1.3

DOMAIN: CHEMICAL TESTING

For this test you will be required to perform the following:

1. Plan a chemical test plot trial for the chemicals and rates supplied to you. The plan should include the following:

   a. a list of chemicals and rates to be tested
   b. a diagram of the test plots
   c. a provision for an adequate control plot
   d. random assignment of numbers to chemicals and test plots
   e. a description of planting procedures
   f. a description of chemical application procedures
   g. procedures and schedules for data collections.

2. Analyze and interpret data from a previous trial.

   a. transfer the raw data to a table or graph.
   b. interpret the results and make a recommendation.

3

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, and 1.3

DOMAIN: CHEMICAL TESTING

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Listed chemicals and rates to be tested.
		2. Logically divided test plot site to accommodate variables.
		3. Made adequate provision for a control plot.
		4. Made random assignment of numbers for chemicals and test plots.
		5. Described correct planting procedures.
		6. Described correct chemical application procedures.
		7. Prepared a list of procedures and schedule for data collection.
		8. Transferred raw data to table or graph.
		9. Interpreted the results and made the best recommendation.

A* = Acceptable
U = Unacceptable

DOMAIN: SOIL SAMPLES

TASK: Take Soil Samples

PERFORMANCE OBJECTIVE

Given a field, take a soil sample and complete the field cropping system. The portions of the sample will be from uniform areas where representative cores are taken. The sample will be air dried, packaged, and shipped to the soils laboratory for analysis.

PERFORMANCE GUIDE

1. Locate a sampling tube or spade and a pail or bucket and obtain a soil sample container from county agent.
2. Label sample container.
3. Record information about kind of cropping on the information sheet.
4. Draw a field sketch of the area to be sampled.
5. Determine if the field is uniform in soil type.
6. Divide the sample into uniform areas.
7. Plan on the sketch about 10 places from which to sample.
8. Push soil tube into soil 6-8 inches, pull up the tube and put soil plug into the bucket.
9. After samples have been taken, thoroughly mix the soil.
10. Spread the soil mixture onto newspaper and let air dry.
11. Fill soil sample bag with the soil mixture, label and mail to a soil laboratory.

TASK ANALYSIS

DOMAIN: SOIL SAMPLES

I. Task Statement: Taking Soil Samples.

II. Task Performance Cue(s): Customer asks you to take a soil sample.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Get a sampling tube or spade, and plastic pail.			2	
2. Obtain soil container from county agent.			3	
3. Identify the sample.			4	
4. Record information about kind of cropping on information sheet.			5	
5. Draw a field sketch of the area to be sampled.			6	
6. Is the field uniform in soil type?	8	7		
7. Divide the sample into uniform areas.			8	
8. Stay away from field borders or farm lanes, roads, and any other area which is distinctly different.			9	
9. Plan on the sketch about 10 places from which to sample.			10	
10. Push soil tube into soil 6-8" then pull up tube and put soil plug into bucket.			11	
11. After samples have been taken, thoroughly mix.			12	
12. Spread soil mixture onto newspaper and air dry.			13	
13. Fill soil bag with mixture, label and mail to soil lab.			EOT	

DOMAIN: SOIL SAMPLES

TASK: Taking Soil Samples

Generalizable to all Tasks in the Soil Samples Domain	Generalizable to the Taking Soil Samples Task	Transferrable to all Tasks in the Soil Samples Domain	Transferrable to the Taking Soil Samples Task
ST #1 Obtain Materials Learning Content: Rules for locating appropriate materials. a. sampling tube or spade b. plastic pail c. soil container from county agent		ST #1 Obtain Materials Learning Content: Obtain sampling materials	
ST #2 Record Information Learning Content: 1. Rules for identifying the sample. 2. Rules for collecting information.		ST #2 Record Information Learning Content: 1. Identify samples 2. Draw field layout 3. Identify soil type changes 4. Divide area into sample areas 5. Determine 10 places from which to sample	

DOMAIN: SOIL SAMPLES

TASK: Taking Soil Samples (Continued)

ST #3 Taking The Sample Learning Content: Rules for taking the sample.		ST #3 Taking The Sample Learning Content: 1. Push soil tube into soil 6-8" then pull up tube and put soil plug into bucket. 2. After samples have been taken, thoroughly mix. 3. Spread soil mixture onto newspaper and air dry. 4. Fill soil bag with mixture, label and mail to soil lab.

DATA SHEET B

CONTENT LIMITS

DOMAIN: SOIL SAMPLES

Section I. Obtaining Materials

A. Probe or Spade
B. Plastic Pail
C. Soil Container
D. Information Sheet

Section II. Recording the Information

A. Previous Crop
B. Crop to be Grown Presently
C. Field Sketch of the Area
D. Soil Type(s)
E. Soil Uniformity
F. Areas to Avoid

Section III. Taking the Sample

A. Obtaining a Plug
B. Mixing a Sample
C. Air Drying Mixture
D. Filling Sample Box or Bag
E. Mail to Soil Lab

PLANNING FORMAT

DRT 1.1, 1.2, and 1.3

DOMAIN: SOIL SAMPLES

Subtasks: Obtaining Materials
Record Information
Taking Samples

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Information on where to find necessary sampling materials
2. Information sheet
3. Records on cropping
4. Soil map of field
5. Facilities to mix and dry soil samples
6. Munsell chart and soil judging manual
7. Mailing containers

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Identifying appropriate materials
2. Locating materials needed
3. Correctly reading the information sheet
4. Reading and evaluating a soil map
5. Taking a soil sample
6. Properly mixing and drying soil samples
7. Properly prepare soil sample to be mailed

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, and 1.3

DOMAIN: SOIL SAMPLES

For this test you will be required to perform the following:

1. Select a field to work with.
2. Select materials needed for soil test.
3. Record cropping information.
4. Determine soil class(s).
5. Decide on ten places in the field to sample from.
6. Take soil samples at recommended areas and depths.
7. Mix and dry soil samples taken.
8. Prepare soil sample to be mailed.
9. Mail samples to the soil lab.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, and 1.3

DOMAIN: SOIL SAMPLES

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Collected appropriate materials for testing.
		2. Correctly identified soil types
		3. Selected proper sample sites
		4. Sampled soil at specified depth
		5. Mixed and dried samples correctly
		6. Prepared and packaged samples.

A* = Acceptable

U = Unacceptable

DOMAIN: SOIL DEFICIENCIES

TASK 1: Identify Soil Deficiencies

PERFORMANCE OBJECTIVE

Given a thoroughly air dried soil sample, perform soil tests to determine soil deficiencies. Duplicated tests will agree.

PERFORMANCE GUIDE

1. Become familiar with soil elements that can become deficient.
2. Secure a chart showing different soil deficiencies for different crops.
3. Perform a soil test.
4. From test results, determine soil deficiencies.

DOMAIN: SOIL DEFICIENCIES

TASK 2: Interpret Soil Lab Reports to Farmers

PERFORMANCE OBJECTIVE

Given a soil lab report, interpret the results or data for a customer. The interpretation of the results must include acceptable completion of all steps on the performance checklist.

PERFORMANCE GUIDE

1. Show customer soil lab report print out.
2. Instruct customer to read all explanatory notes before reading print out.
3. Check sample number so customer knows which area the recommendations correspond to.
4. Read the amount of Nitrogen, Phosphorous, Pottassium (N,P, and K) recommended per acre.
5. Read the amount of tons of lime recommended per acre.
6. Explain to customer that columns labeled water,pH, lime index, soil color, soil texture, and present levels of P and K are important in terms of making recommendations for fertilizer rate.
7. Check cropping program to be followed.
8. Suggest to the customer proper analysis fertilizer to fulfill recommendations.

TASK ANALYSIS

DOMAIN: SOIL DEFICIENCIES

I. Task 1: Identify Soil Deficiencies.

II. Task Performance Cue(s): Customer asks you to identify soil deficiencies.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Are you familiar with the soil derived elements that can become deficient?	3	2		
2. Study the essential soil elements that may become deficient.			3	
3. Secure a chart showing different soil deficiency for different crops.			4	
4. Obtain material for taking soil test.			5	
5. Identify sample area.			6	
6. Is field uniform in soil type?	7	12		
7. Plot 10 places to sample.			8	
8. Obtain soil core.			9	
9. Mix soil.			10	
10. Air dry.			11	
11. Send to soil lab.			13	
12. Divide area into uniform soil types.			7	
13. Show customer lab print out.			14	
14. Instruct customer to read all explanatory notes before reading print out.			15	
15. Check sample numbers so customers know which area the recommendations refer to.			16	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
16. Read the amount of N, P_2O_5, and K_2O recommended per acre. (Nitrogen, Phosphorus and Potassium)			17	
17. Read the amount of tons of lime recommended per acre.			18	
18. Calculate the amount of fertilizer and lime needed for given acreage.			19	
19. Explain significance of the columns for future recommendations to the customer.			20	
20. Check cropping system to be followed.			21	
21. Suggest proper analysis and amount of fertilizer to customer to fulfill recommendations.			EOT	

TASK ANALYSIS

DOMAIN: SOIL DEFICIENCIES

I. Task 2: Interpreting Soil Lab Reports to Farmers

II. Task Performance Cue(s): Supervisor asks you to interpret soil lab report.
Customer asks you to interpret soil lab report.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Show customer soil lab print out.			2	
2. Instruct customer to read all explanatory notes before reading print out.			3	
3. Check sample number so customers know which area the recommendations correspond to.			4	
4. Read the amount of N, P_2O_5 and K_2O recommended per acre. (Nitrogen, Phosphorus, Potassium)			5	
5. Read the amount of tons of lime per acre.			6	
6. Calculate number of lbs. of N, P_2O_5, K_2O and lime needed for given acreage.			7	
7. Explain the significance of the columns for future recommendations to the customer. The columns labeled water, pH, lime index, soil color, and texture and present levels of P and K are important to the farmer in terms of making recommendations for fertilization rate.			8	
8. Check cropping program to be followed.			9	
9. Suggest to the customer proper analysis fertilizer to fulfill recommendations.			EOT	

DOMAIN: SOIL DEFICIENCIES

TASK 1: Identify Soil Deficiencies

Generalizable to all Tasks in the Soil Deficiencies Domain	Generalizable to the Identify Soil Deficiencies Task	Transferrable to all Tasks in the Soil Deficiencies Domain	Transferrable to the Identify Soil Deficiencies Task
	ST #1 Collecting Information Learning Content: 1. Rules for obtaining information for soil deficiencies. 2. Rules for determining the soil derived elements that can become deficient.		ST #1 Collecting Information Learning Content: Obtain and interpret charts.
	ST #2 Perform Tests Learning Content: 1. Collecting test equipment. 2. Rules for taking soil test.		ST #2 Perform Tests Learning Content: 1. Collect testing equipment. 2. Take soil test.
ST #3 Identify Deficiency Learning Content: 1. Rules for instructing customer how to read soil lab print out.		ST #3 Identify Deficiency Learning Content: 1. Read explanatory notes.	

DOMAIN: SOIL DEFICIENCIES

TASK 1: Identify Soil Deficiencies (Continued)

2. Rules for interpreting test results.		2. Read soil lab print out.
3. Rules for identifying the proper fertilizer to correct deficiencies.		3. Check crops desired.
4. Rules for calculating amounts needed.		4. Recommend fertilizer.
		5. Calculate amounts needed.

DOMAIN: SOIL DEFICIENCY

Task 2: Interpreting Soil Lab Reports to Farmers

Generalizable to all Tasks in the Soil Deficiencies Domain	Generalizable to the Identify Soil Deficiencies Task	Transferrable to all Tasks in the Soil Deficiencies Domain	Transferrable to the Identify Soil Deficiencies Task
ST #1 Identify Deficiency Learning Content: 1. Rules for instructing customer how to read soil lab print out 2. Rules for interpreting test results 3. Rules for identifying the proper fertilizer to correct deficiencies 4. Rules for calculating amounts needed		ST #1 Identify Deficiency Learning Content: 1. Read explanatory notes. 2. Read soil lab print out. 3. Check crops desired. 4. Recommend fertilizer. 5. Calculate amounts needed.	

DATA SHEET A

CONTENT LIMITS

DOMAIN: SOIL DEFICIENCIES

Section I. Identifying Soil Deficiencies
Collecting Information

A. Soil Derived Elements That Can Become Deficient

1. Nitrogen
2. Phosphorus
3. Potassium
4. Calcium
5. Sulphur
6. Iron
7. Magnesium
8. Manganese
9. Zinc

B. Soil Test Equipment

1. Soil probe
2. Soil bags
3. Plastic pail
4. Information sheet

DATA SHEET B

CONTENT LIMITS

DOMAIN: SOIL DEFICIENCIES

Section I: Identify Deficiency

A. Instructions to Customers for Reading Soil Lab Print Out

1. Explanatory notes
2. Checking sample numbers

B. Interpret Test Results

1. Amount of nitrogen(N), phosphorus (P_2O_5) and potassium (K_2O) recommended.
2. Soil pH
3. Cropping program to be followed
4. Suggestions to customer on proper fertilizer analysis to fulfill recommendations.

C. Fertilizer Recommendations

1. Water pH, lime index, soil color, texture and present levels of phosphorus and potassium are important in terms of making recommendations for fertilization rate.

D. Calculate Amounts Needed.

1. Areas deficient
2. Crop to be grown
3. Desired yield

PLANNING FORMAT

DRT 1.1 and 1.2

DOMAIN: SOIL DEFICIENCIES

Subtasks: Collecting Information
Performing Tests

Content Limits

See Data Sheet A, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies.

1. Soil deficiencies and soil test charts
2. Appropriate information on performing lab test on soil samples for nitrogen, phosphorus, potassium and trace elements.
3. Samples for nitrogen, phosphorus, potassium and trace elements.
4. Lab manual on soil and tissue testing.
5. Soil and tissue samples
6. Lab equipment necessary for tests.
7. Appropriate handouts.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Using soil deficiency charts
2. Taking soil samples
3. Testing soil samples for nitrogen, phosphorus, potassium and and trace element deficiencies
4. Using the lab manual
5. Using the lab equipment correctly.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 1.2

DOMAIN: SOIL DEFICIENCIES

For this test you will be required to perform the following:

1. Use a soil deficiency chart
2. Take a soil sample
3. Use appropriate lab testing procedures
4. Properly use lab equipment during testing
5. Select proper ways to test soil samples for nitrogen, phosphorus, potassium and trace element deficiencies.

PERFORMANCE CHECKLIST

DRT 1.1 and 1.2

DOMAIN: SOIL DEFICIENCIES

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Extracted acceptable core for soil sample.
		2. Used proper lab procedures.
		3. Used proper lab equipment.
		4. Discriminated appropriate tests.
		5. Results of tests are accurate.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 1.3 and 2.1

DOMAIN: SOIL DEFICIENCIES

Subtask: Identify Deficiencies

Content Limits

See Data Sheet B, Section I

Test Stimulus Characteristics

The student will be provided with the following data, material, and supplies:

1. Soil lab print outs
2. Instructions on reading print outs
3. Appropriate handouts.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Reading soil lab print outs
2. Recommending amounts of nitrogen, phosphorus, potassium, and trace elements
3. Recommending fertilizer rates
4. Calculating amounts needed.

EXAMINEE INSTRUCTIONS

DRT 1.3 and 2.1

DOMAIN: SOIL DEFICIENCIES

For this test you will be required to perform the following:

1. Description of all explanatory notes on print out
2. Check sample numbers being sure the areas correspond to the recommendations
3. Interpret test results
4. Recommend crops based on tests
5. Identify proper fertilizer to correct deficiencies
6. Calculate amounts needed.

PERFORMANCE CHECKLIST

DRT 1.3 and 2.1

DOMAIN: SOIL DEFICIENCIES

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Interpreted test results.
		2. Recommended crop based on tests.
		3. Identified proper fertilizer to correct deficiencies.
		4. Calculated amounts needed.

A* = Acceptable
U = Unacceptable

DOMAIN: CALCULATE APPLICATION RATES

TASKS 1 and 2: Calculate Application Rates for Dry and Liquid Chemicals

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PERFORMANCE OBJECTIVE

Given an agricultural chemical, calculate the correct application rate to apply the desired amount of chemical ingredient to within a two percent tolerance of the label recommendation for the crop chosen.

PERFORMANCE GUIDE

1. Read the label so that the proper application rate may be determined.
2. For dry chemicals:
    a. determine application setting
    b. determine width of application
    c. determine the speed of travel
    d. complete calculation of application rate.
3. For liquid chemicals:
    a. determine pump pressure
    b. determine width of application
    c. determine the speed of travel
    d. complete calculation of application rate.

TASK ANALYSIS

DOMAIN: CALCULATE APPLICATION RATES

I. Task 1: Calculate Application Rates for Dry Chemicals

II. Task Performance Cue(s): Employer asks you to calculate application rates for a dry chemical

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine recommended application rate from the label.			2	
2. Does label require safety clothing?	3	4		
3. Obtain and use safety clothing.			4	
4. Fill applicator box to marked level.			5	
5. Choose box opening recommended for rate.			6	
6. Apply to a measured area.			7	
7. Measure the amount needed to refill the box to mark.			8	
8. Compute actual application rate. $\frac{\text{Amount used}}{\text{area covered}}$ = application rate			9	
9. Is amount of chemical used correct?	EOT	10		
10. Is the application too heavy?	11	12		
11. Decrease box opening.		6		
12. Is the application too light?	13	EOT		
13. Increase box opening.		6		

TASK ANALYSIS

DOMAIN: CALCULATE APPLICATION RATES

I. Task 2: Calculate Application Rates for Liquid Chemicals.

II. Task Performance Cue(s): Employer asks you to calculate application rate for liquid chemical.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine recommended application rate from the label.			2	
2. Does the label require safety clothing or equipment?	3	4		
3. Obtain and use safety clothing and equipment recommended.			4	
4. Select pump pressure and nozzle size.			5	
5. Select speed of travel.			6	
6. Fill tank.			7	
7. Operate in place to fill the plumbing.			8	
8. Top off tank.			9	
9. Apply to measured area.			10	
10. Measure water needed to refill tank.			11	
11. Compute actual application rate. $\frac{\text{Amount water used}}{\text{area covered}} = \text{application rate}$			12	
12. Is actual application correct?	EOT	13		
13. Is the application rate too heavy?	14	15		
14. Decrease pressure and/or increase speed.			9	
15. Is the application rate too light?	16	EOT		
16. Increase pressure and/or decrease speed.			9	

DOMAIN: CALCULATE APPLICATION RATES

TASK 1: Calculating Rates for Dry Chemicals

Generalizable to all Tasks in Calculating Application Rates Domain	Generalizable to the Calculating Rates for Dry Chemical Task	Transferrable to all Tasks in Calculating Application Rates Domain	Transferrable to the Calculating Rates for Dry Chemicals Task
ST #1 Collecting Information Learning Content: Rules for interpreting label information.		ST #1 Collecting Information Learning Content: Read label to determine application information.	
ST #2 Safety Learning Content: Rules for using safety clothing and equipment.		ST #2 Safety Learning Content: Obtain safety clothing and equipment.	
ST #3 Trial Run Learning Content: 1. Rules for setting up a trial run to check application rate. 2. Rules for calculating application rate. 3. Rules for checking new adjustments.	ST #3 Rates for Dry Chemicals Learning Content: 1. Rules for making a trial run for dry application. 2. Rules for making equipment adjustments.	ST #3 Trial Run Learning Content: 1. Set up a trial run to check application rates. 2. Calculate application rate. 3. Re-check new adjustments for accuracy.	ST ## Rates for Dry Chemicals Learning Content: 1. Perform a trial run to check liquid application rate. 2. Adjust dry equipment for correct application rate.

DOMAIN: CALCULATE APPLICATION RATES

TASK 2: Calculating Rates for Liquid Chemicals

Generalizable to all Tasks in the Calculating Application Rates Domain	Generalizable to the Calculating Rates for Liquid Chemicals Task	Transferrable to all Tasks in Calculating Application Rates Domain	Transferrable to the Calculating Rates for Liquid Chemicals Task
ST #1		ST #1	
Collecting Information		Collecting Information	
Learning Content:		Learning Content:	
Rules for interpreting label information.		Read label to determine application information.	
ST #2		ST #2	
Safety		Safety	
Learning Content:		Learning Content:	
Rules for using safety clothing and equipment.		Obtain safety clothing and equipment.	
ST #3	ST #3	ST #3	ST #3
Trial Run	Rates for Liquid Chemicals	Trial Run	Rates for Liquid Chemicals
Learning Content:	Learning Content:	Learning Content:	Learning Content:
1. Rules for setting up a trial run to check application rate.	1. Rules for making a trial run for liquid application.	1. Set up a trial run to check application rate.	1. Perform a trial run to check liquid application rate.
2. Rules for calculating application rate.	2. Rules for selecting nozzles for given application rate.	2. Calculate application rate.	2. Select correct nozzle for the given application rate.
3. Rules for checking new adjustments.	3. Rules for making equipment adjustment.	3. Re-check new adjustments for accuracy.	3. Adjust liquid sprayer equipment for correct application rate.

DATA SHEET A

CONTENT LIMITS

DOMAIN: CALCULATE APPLICATION RATES

Section I. Rates for Dry Chemicals

A. Preparations for Trial Run

1. Filling spreader boxes
2. Setting adjustments
3. Determining speed of travel

B. Correctional Adjustments

1. Speed of travel
2. Adjustment of openings
3. Re-checking rate of application

Section II. Rates for Liquid Chemicals

A. Preparations for Trial Run

1. Setting tank pressure
2. Selecting and adjusting nozzles
3. Filling tank
4. Determining speed of travel

B. Correctional Adjustments

1. Pressure of tank
2. Nozzle size or opening
3. Speed of travel
4. Re-checking rate of application

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DATA SHEET B

CONTENT LIMITS

Domain: Calculate Application Rates

Section I: Collecting Information

Interpretation of Label

1. Recommended Application rate
2. Recommended speed of travel
3. Recommended pump pressure
4. Recommended size and opening of nozzle
5. Recommended box opening

Section II. Safety

- A. Clothing Needed for Dry Chemicals
- B. Clothing Needed for Liquid Chemicals
- C. Equipment Needed for Dry Chemical
- D. Equipment Needed for Liquid Chemicals

Section III. Trial Run

- A. Setting Up a Trial Run
  1. Measuring test area for trial run
  2. Determining amount of chemical used in trial run
- B. Calculation of Application Rate
  1. Amount of area covered
  2. Amount of chemical used
- C. Check of New Adjustments
  1. Performing repeated trial runs
  2. Re-calculating application rates

PLANNING FORMAT

DRT 1.1, 1.2, 2.1, and 2.2

DOMAIN: CALCULATING APPLICATION RATES

Subtasks: Collecting Information
Safety

__Content Limits__

See Data Sheet B, Sections I and II.

__Test Stimulus Characteristics__

The student will be provided with the following data, material, and supplies.

1. Sample liquid chemical label
2. Sample dry chemical label
3. Safety clothing and equipment

__Test Response Characteristics__

The student will demonstrate the concepts, principles, and procedures involved in:

1. Reading a liquid chemical label and determining relevant application data
2. Reading a dry chemical label and determining relevant application data
3. Reading a label and selecting appropriate clothing and equipment for safety

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 2.1, and 2.2

DOMAIN: CALCUALTING APPLICATION RATES

For this test you will be required to perform the following:

1. Read a liquid chemical label and make a listing of the data necessary to calculate application rates.
2. Read a dry chemical label and make a listing of the data necessary to calculate application rates.
3. Read a label and select proper safety equipment and clothing.

PLANNING FORMAT

DRT 1.3 and 2.3

DOMAIN: CALCULATE APPLICATION RATES

Subtasks: Trial Run
Rates for Dry Chemicals
Rates for Liquid Chemicals

Content Limits

See Data Sheet A, Sections I and II.
See Data Sheet B, Section III.

Test Stimulus Characteristics

The student will be provided the following data, materials, and supplies:

1. Application rate data for dry chemical
2. Application rate data for liquid chemical
3. Dry chemical applicator equipment
4. Liquid chemical applicator equipment
5. Measuring tools
6. Tools for adjusting applicators
7. Trial-test area.

Test Response Characteristics

The student will demonstrate the concepts, principles, and practices involved in:

1. Adjusting a dry chemical applicator for a specific application rate
2. Adjusting a liquid chemical applicator for a specific application rate
3. Setting up a test area for a trial run
4. Performing a trial run for dry chemicals
5. Performing a trial run for liquid chemical
6. Determining amount of chemicals used in trial runs
7. Calculating actual application rates of the trial runs
8. Performing new adjustments on the equipment
9. Performing repeated trial runs to re-check new adjustments.

EXAMINEE INSTRUCTIONS

DRT 1.3 and 2.3

DOMAIN: CALCULATING APPLICATION RATES

For this test you will be required to perform the following:

1. Adjust a dry chemical applicator for a specific application rate
2. Adjust a liquid chemical applicator for a specific application rate
3. Set up a test area for a trial run
4. Perform a trial run for dry chemicals
5. Perform a trial run for liquid chemicals
6. Determine the amount of chemicals used in the trial runs
7. Calculate the actual application rates of the trial runs
8. Perform new adjustments on the equipment
9. Perform repeated trial runs to re-check new adjustments.

PERFORMANCE CHECKLIST

DRT 1.3 and 2.3

DOMAIN: CALCULATING APPLICATION RATES

A*	U	EVALUATIVE STATEMTENT AND CRITERIA
		1. Read the chemical label
		2. Used appropriate safety clothing and equipment
		3. Used proper procedures in adjusting dry applicator equipment
		4. Used proper procedures in adjusting liquid applicator equipment
		5. Correctly set up and measured test area
		6. Performed correct trial run for dry chemicals
		a. accurately measured amount of dry chemical used in the trial run
		b. correctly calculated the actual application rate using the trial run data
		c. made the correct re-adjustments to the dry chemical applicator
		d. performed repeated trials to re-check adjustments
		7. Made final actual application rate that is accurate within a two percent tolerance of the dry chemical label recommendation for the crop chosen
		8. Performed correct trial run for liquid chemicals
		a. accurately measured the amount of liquid chemical used in the trial run
		b. correctly calculated the actual application rate using the trial run data
		c. made the correct re-adjustments to the liquid chemical applicator
		d. performed repeated trials to re-check adjustments
		9. Made final actual application rate that is accurate within a two percent tolerance of the liquid chemical label recommendations for the crop chosen

A* = Acceptable
U . - Unacceptable

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 1: Prepare Boom Type Application Equipment for Use

PERFORMANCE OBJECTIVE

Given boom type application equipment, pipe wrenches, screw drivers, an open box end wrench set, oiler, and service manual, follow the manufacturer's procedures and specifications and prepare boom type equipment for use. The equipment will be capable of meeting the two percent tolerance for application rates.

PERFORMANCE GUIDE

1. Dewinterize truck.
2. Remove air from pump, lines and hoses.
3. Set pump to desired setting of application rate.
4. Determine that agitation pump is operational.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 2: Adjust Boom Type Applicating Equipment

PERFORMANCE OBJECTIVE

Given boom type applicating equipment and an application rate, adjust the applicator to the correct application rate within two percent. The individual nozzles will be within five percent of the proper delivery volume.

PERFORMANCE GUIDE

1. Set boom height and position.
2. Activate pump and check for leaks.
   a. check boom for leaks
   b. tighten connections
   c. inspect for defective parts
3. Inspect and clean nozzles, screens and filters.
4. Evaluate spray pattern.
   a. correct overlap (change nozzle or boom height)
   b. check pressure
   c. check nozzle output (change nozzles)
5. Evaluate application rate.
   a. adjust ground speed synchronization
   b. adjust metering pump
   c. correct for application speed and pressure
   d. check wind drift and other weather condition
   e. recheck calibration

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 3: Calibrate Spraying Equipment

PERFORMANCE OBJECTIVE

Given equipment for spraying agricultural chemicals, calibrate the equipment to deliver the proper amount of chemical per acre as specified on the label.

PERFORMANCE GUIDE

1. Determine ground speed synchronization.
2. Determine speed, pumping pressure, and nozzle size.
3. Fill tank with water.
   a. fill plumbing by operating sprayer in place
   b. fill tank to top again with water
4. Spray a measured area.
5. Measure amount of water to refill tank to determine proper application rate.
6. Recheck calibration.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 4: Calculate Proportions of Chemical and Carrying Agents

PERFORMANCE OBJECTIVE

Given agricultural chemicals and carrying agents, calculate the correct proportions of the chemicals and carrying agents to provide for the desired application method and rate. All checklist items will be rated acceptable.

PERFORMANCE GUIDE

1. Determine how much the sprayer tank holds.
2. Read label of chemical to determine the amount of formulation to be used per acre.
3. Determine how to adjust how many gallons of spray/unit area the equipment will apply, then adjust sprayer.
4. Determine how much chemical to put into the tank to apply correct application.
5. Divide the total gallon capacity of the tank by the gallons applied per acre.
6. Add the amount of chemical to small amount of water in a clean container.
7. Stir until chemical and water are mixed well into a slurry.
8. Operate the sprayer's agitator.
9. Add chemical to partly filled sprayer tank.
10. Finish filling sprayer tank with water.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 4: Calculate Proportions of Chemical and Carrying Agents

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Determined tank capacity of sprayer of formulation used per acre.
		2. Read label of chemical to determine amount.
		3. Adjusted sprayer to given gallons spray/unit acre.
		4. Formulated units of chemical per tankful.
		5. Divided total gallon capacity of tank by the water in a clean container.
		6. Added the chemical to a small amount of water.
		7. Stirred until chemical and water were mixed well in to slurry.
		8. Operated the sprayer agitator.
		9. Added chemical to partly filled sprayer tank.
		10. Finished filling sprayer tank with water.

A* = Acceptable
U = Unacceptable

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 5: Mix Chemical and Carrying Agents

PERFORMANCE OBJECTIVE

Given agricultural chemicals and carrying agents, mix them together to a uniform blend that will result in even application.

PERFORMANCE GUIDE

1. Read agriculture chemical label and follow manufacturer's directions.
2. Wear recommended safety clothing.
3. Make a compatability test with pesticide and carrying agent.
4. Partly fill container with carrying agent.
5. Add chemical in recommended amount.
6. Keep agitated.
7. Complete filling of carrying agent.
8. Agitate to mix thoroughly.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 5: Apply Liquid Chemicals with Boom Type Equipment

PERFORMANCE OBJECTIVE

Given boom type equipment and application rate, apply liquid chemical at the designated rate within a two percent tolerance.

PERFORMANCE GUIDE

1. Determine if chemical needs agitation during application and if so, activate proper agitation device in the liquid.
2. Determine the width of the spray area.
3. Determine proper boom height.
4. Inspect nozzles.
   a. select proper size nozzles.
   b. space nozzles correctly.
5. Calibrate sprayer.
6. Evaluate application rate.
   a. adjust ground speed synchronization.
   b. select ground speed and pressure for application.
7. Recheck calibration.
8. Apply chemical.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 7: Apply Liquid Chemicals with Band Type Equipment

PERFORMANCE OBJECTIVE

Given band type equipment and application rate, apply liquid chemical at the desired rate within a two percent tolerance.

PERFORMANCE GUIDE

1. Determine if chemical needs agitation during application and if so, activate proper agitation device in the liquid.
2. Determine proper row spacing.
3. Calibrate sprayer correctly.
4. Determine proper nozzle size, ground speed and pressure for application.
5. Set nozzles at correct height.
6. Adjust nozzles for correct spray pattern.
7. Recheck calibration.
8. Apply liquid chemicals.

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 1: Prepare Boom Type Application Equipment for Use.

II. Task Performance Cue(s): Asked by employer to prepare boom type equipment for use.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the truck unwinterized?	3	2		
2. Unwinterize the truck.			3	
3. Set pump to ten pounds pressure to remove air from pump, lines and hoses.			4	
4. Drive the truck 100 yards.			5	
5. Determine that agitation pump is operational.			6	
[illegible] Set pump to desired setting of application rate.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 2: Adjust Boom Type Applicating Equipment

II. Task Performance Cue(s): You are asked by employer to adjust boom type applicating equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is boom height and position set?	3	2		
2. Set boom to proper position and height.			3	
3. Activate pump with water in tank.			4	
4. Are there any leaks?	5	8		
5. Are all connections tight?	7	6		
6. Tighten connections.			7	
7. Locate and replace defective parts.			8	
8. Are nozzle filter screens plugged up?	9	10		
9. Clean nozzles, filters and screens.			10	
10. Is spray pattern and overlap correct?	12	11		
11. Change nozzles and boom height to correct problem.			12	
12. Is application rate correct?	19	13		
13. Is application equipment ground speed synchronized?	14	15		
14. Adjust metering pump to desired rate.			19	
15. Is application rate too heavy due to improper pressure adjustments?	16	17		
16. Increase speed and/or decrease pressure and/or nozzle size to decrease rate.			18	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
17. Decrease speed and/or increase pressure and/or increase nozzle size to increase rate.			18	
18. Too small nozzle size will increase wind drift. Wind velocity needs to be taken into account and watch for spray hitting non-target areas. Check wind drift.			19	
19. Recheck application rate.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 3: Calibrate Spraying Equipment

II. Task Performance Cue(s): The employer asks you to calibrate spraying equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Has the speed, pumping pressure and nozzles been chosen?	3	2		
2. Choose a speed, pressure, and nozzle size that you have determined will work.	3			
3. Fill the spray tank with water.			4	
4. Has the plumbing been filled?	6	5		
5. Operate the sprayer in place to fill the plumbing.			6	
6. Fill the tank to the top again.			7	
7. Spray a measured area.			8	
8. Measure the amount of water needed to refill the tank to determine the application rate per unit area.			9	
9. Is the application rate correct?	EOT	10		
10. Is the application rate too heavy?	11	12		
11. Increase speed and/or decrease pressure and/or decrease nozzle size to decrease rate.			13	
12. Decrease speed and/or increase pressure and/or increase nozzle size to increase rate.			13	
13. Re-check calibration by repeating steps 3-12 until correct.			14	
14. After re-check, continually observe that right rate and correct pattern is being applied.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 4: Calculate Proportions of Chemical and Carrying Agents

II. Task Performance Cue(s): You are asked by the employer to calculate proportions of chemical and carrying agent.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine how much your sprayer tank holds.			2	
2. Read label to determine the amount of formulation to be used per unit acre.			3	
3. Have you adjusted your sprayer and know how many gallons of spray/unit area your equipment will apply?	5	4		
4. Adjust sprayer to a given gallons of spray/per unit area.			5	
5. Do you know how much chemical to put into the tank to apply correct dosage.	7	6		
6. Divide the total gallon capacity of the tank by the gallons applied per acre.			7	
7. Add the amount of chemical to small amount of water in a clean container.			8	
8. Stir until it is mixed well into a slurry.			9	
9. Operate the sprayer agitator.			10	
10. Add chemical to partly filled sprayer tank.			11	
11. Finish filling sprayer tank with water.			12	
12. Clean up any spills or mess.			13	
13. Put back unused chemicals in storage.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 5: Mix Chemical and Carrying Agent

II. Task Performance Cue(s): Supervisor asks you to mix chemical and carrying agent.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Have you read the pesticide label?	3	2		
2. Read the label to find mixing directions.			3	
3. Before any large amounts are mixed, a compatability test should be made with a small quantity. Follow manufacturer's directions.			4	
4. Partly fill container with carrying agent.			5	
5. Add chemical in recommended amount.			6	
6. Keep agitated.			7	
7. Complete filling of carrying agent.			8	
8. Agitate thoroughly.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 6: Apply Liquid Chemical with Boom Type Equipment

II. Task Performance Cue(s): Customer asks you to apply liquid chemical with boom type applicating equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is spray area to be done with boom type equipment?	2	EOT		
2. Does liquid chemical need agitation during application?	3	4		
3. Put proper agitation device in with liquid.			4	
4. Is the width of spray area determined?	6	5		
5. Determine the width of the total spray area.			6	
6. Determine the required rate of application per/acre.			7	
7. Select proper nozzles for the job.			8	
8. Are the nozzles spaced correctly?	10	9		
9. Select proper nozzle spacing.			10	
10. Has sprayer been calibrated?	12	11		
11. Select proper ground speed and pressure for application rate.			12	
12. Determine proper boom height.			13	
13. Check and re-adjust calibration.			14	
14. Apply chemicals.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

I. Task 7: Apply Liquid Chemical with Band Type Equipment

II. Task Performance Cue(s): Asked by customer to apply liquid chemical with band type equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is spray area to be done with band type equipment?	2	EOT		
2. Does liquid chemical need agitation during application?	3	4		
3. Activate proper agitation device in with liquid.			4	
4. Determine the proper row spacing.			5	
5. Is the sprayer calibrated correctly?	8	6		
6. Select nozzle, proper ground speed and pressure for application.			7	
7. Adjust the above three things to make the proper amount per acre.			8	
8. Are nozzles at the correct height?	10	9		
9. Adjust nozzles for correct spray patterns.			10	
10. Check calibration.			11	
11. Apply chemicals.			EOT	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 1: Prepare Boom Type Application Equipment for Use

Generalizable to all Tasks in the Preparation For and Application of Liquids Domain	Generalizable to the Prepare Boom Type Application Equipment for Use Task	Transferrable to all Tasks in the Preparation For and Application of Liquids Domain	Transferrable to the Prepare Boom Type Application Equipment for Use Task
ST #1		ST #1	
Calibration Test		Calibration Test	
Learning Content:		Learning Content:	
1. Rules for interpreting chemical label information.		1. Read Chemical label to determine application rate.	
2. Rules for setting up a calibration test.		2. Set up a calibration test.	
3. Rules for calculating application rates.		3. Calculate application rate.	
4. Rules for re-checking new adjustments.		4. Re-check new adjustments for accuracy.	
ST #2		ST #2	
Evaluating Pumping System		Evaluating Pumping System	
Learning Content:		Learning Content:	
1. Rules for determining leaks.		1. Fill tank.	
2. Rules for correcting leaks.		2. Operate pump.	
		3. Search for leaks.	
		4. Tighten clamps and connections.	
		5. Replace worn parts.	
		6. Operate equipment.	
		7. Inspect agitation mechanism.	
		8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 1: Prepare Boom Type Application Equipment for Use (Continued)

	ST #3 Preparation of Equipment Learning Content: 1. Rules for dewinterizing equipment 2. Rules for removing air from pump, lines, and hoses		ST #3 Preparation of Equipment Learning Content: 1. Dewinterize equipment. 2. Partially fill tanks. 3. Set pump to ten pounds pressure. 4. Drive the truck 100 yards. 5. Operate agitation pump.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 2: Adjust Boom-Type Application Equipment

Generalizable to all Tasks in the Preparation for and Application of Liquids Domain	Generalizable to the Adjust Boom-Type Application Equipment Task	Transferrable to all Tasks in the Preparation for and Application of Liquids Domain	Transferrable to the Adjust Boom-Type Application Equipment Task
ST #1		ST #1	
Calibration Test		Calibration Test	
Learning Content:		Learning Content:	
1. Rules for interpreting chemical label information,		1. Read Chemical label to determine application rate.	
2. Rules for setting up a calibration test,		2. Set up a calibration test.	
3. Rules for calculating application rates,		3. Calculate application rate.	
4. Rules for re-checking new adjustments.		4. Re-check new adjustments for accuracy.	
ST #2		ST #2	
Evaluating Pumping System		Evaluating Pumping System	
Learning Content:		Learning Content:	
1. Rules for determining leaks,		1. Fill tank.	
2. Rules for correcting leaks,		2. Operate pump.	
		3. Search for leaks.	
		4. Tighten clamps and connections.	
		5. Replace worn parts.	
		6. Operate equipment.	
		7. Inspect agitation mechanism.	
		8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 2: Adjust Boom Type Application Equipment (Continued)

	ST #3 — Boom and Nozzle Adjustment Learning Content: 1. Rules for cleaning nozzles, screens, and filters. 2. Rules for obtaining and adjusting desired spray pattern. 3. Rules for adjusting boom height. 4. Rules for adjusting boom position. 5. Rules for adjusting proper row spacing and width of spray area.		ST #3 Boom and Nozzle Adjustment Learning Content: 1. Clean nozzles, screens, and filters. 2. Adjust spray pattern. 3. Adjust nozzle direction. 4. Set boom height. 5. Set boom position. 6. Set for proper row spacing

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 3: Calibrate Spraying Equipment

Generalizable to all Tasks in the Preparation for and Application of Liquids Domain	Generalizable to the Calibrate Spraying Equipment Task	Transferrable to all Tasks in the Preparation for and Application of Liquids Domain	Transferrable to the Calibrate Spraying Equipment Task
ST #1 Calibration Test Learning Content: 1. Rules for interpreting chemical label information 2. Rules for setting up a calibration test 3. Rules for calculating application rates 4. Rules for re-checking new adjustments.		ST #1 Calibration Test Learning Content: 1. Read chemical label to determine application rate. 2. Set up a calibration test. 3. Calculate application rate. 4. Re-check new adjustments for accuracy.	
ST #2 Evaluating Pumping System Learning Content: 1. Rules for determining leaks 2. Rules for correcting leaks.		ST #2 Evaluating Pumping System Learning Content: 1. Fill tank. 2. Operate pump. 3. Search for leaks. 4. Tighten clamps and connections. 5. Replace worn parts. 6. Operate equipment. 7. Inspect agitation mechanism. 8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 3: Calibrate Spraying Equipment

(Continued)

ST #3

Calibrate Spraying Equipment

Learning Content:

Rules for calibrating sprayer

ST #3

Calibrate Spraying Equipment

Learning Content:

1. Select nozzle to prevent wind drift.
2. Check nozzle output for rate.
3. Check and adjust metering pump.
4. Check and adjust pressure.
5. Check and adjust speed of travel.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 4: Calculate Proportions of Chemical and Carrying Agents

Generalizable to all Tasks in the Preparation for and Application of Liquids Domain	Generalizable to the Calculate Proportions of Chemical and Carrying Agent Task	Transferrable to all Tasks in the Preparation for and Application of Liquids Domain	Transferrable to the Calculate Proportions of Chemical and Carrying Agent Task
ST #1		ST #1	
Calibration Test		Calibration Test	
Learning Content:		Learning Content:	
1. Rules for interpreting chemical label information		1. Read chemical label to determine application rate.	
2. Rules for setting up a calibration test		2. Set up a calibration test.	
3. Rules for calculating application rates		3. Calculate application rate.	
4. Rules for re-checking new adjustments		4. Re-check new adjustments for accuracy.	
ST #2		ST #2	
Evaluating Pumping System		Evaluating Pumping System	
Learning Content:		Learning Content:	
1. Rules for determining leaks		1. Fill tank.	
2. Rules for correcting leaks		2. Operate pump.	
		3. Search for leaks.	
		4. Tighten clamps and connections.	
		5. Replace worn parts.	
		6. Operate equipment.	
		7. Inspect agitation mechanism.	
		8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 4: Calculate Proportions of Chemical and Carrying Agents (Continued)

ST #3

Calculating Proportions of Chemical and Carrying Agents

Learning Content:

Rules for calculating proportions of chemical and carrying agents.

ST #3

Calculating Proportions of Chemical and Carrying Agents

Learning Content:

1. Determine how much liquid sprayer tank holds.
2. Determine how much liquid is applied per acre.
3. Read label to determine amount of chemical needed per acre.
4. Determine how much chemical to get desired application.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 5: Mix Chemical and Carrying Agent

Generalizable to all Tasks in the Preparation for and Application of Liquids Domain	Generalizable to the Mix Chemical and Carrying Agent Task	Transferrable to all Tasks in the Preparation for and Application of Liquids Domain	Transferrable to the Mix Chemical and Carrying Agent Task
ST #1		ST #1	
Calibration Test		Calibration Test	
Learning Content:		Learning Content:	
1. Rules for interpreting chemical label information.		1. Read chemical label to determine application rate.	
2. Rules for setting up a calibration test,		2. Set up a calibration test.	
3. Rules for calculating application rates,		3. Calculate application rate.	
4. Rules for re-checking new adjustment.		4. Re-check new adjustments for accuracy.	
ST #2		ST #2	
Evaluating Pumping System.		Evaluating Pumping System	
Learning Content:		Learning Content:	
1. Rules for determining leaks.		1. Fill tank.	
2. Rules for correcting leaks,		2. Operate pump.	
		3. Search for leaks.	
		4. Tighten clamps and connections.	
		5. Replace worn parts.	
		6. Operate equipment.	
		7. Inspect agitation mechanism.	
		8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 5: Mix Chemical and Carrying Agent (Continued)

	ST #3 Mixing Chemical and Carrying Agent Learning Content: 1. Rules for performing a compatability test 2. Rules for filling the tank 3. Rules for cleaning up after mixing		ST #3 Mixing Chemical and Carrying Agent Learning Content: 1. Mix small quantity of chemical and carrying agent. 2. Partially fill tank with carrrying agent. 3. Add chemical in recommended amount. 4. Keep agitated. 5. Add remainder of chemical agent. 6. Continue agitation. 7. Store unused chemicals. 8. Follow safety precautions for rinsing and disposing of empty containers.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 6: Apply Liquid Chemicals With Boom-Type Equipment

Generalizable to all Tasks in the Preparation for and Application of Liquids Domain	Generalizable to the Apply Liquid Chemicals With Boom-Type Equipment Task	Transferrable to all Tasks in the Preparation for and Application of Liquids Domain	Transferrable to the Apply Liquid Chemicals With Boom-Type Equipment Task
ST #1		ST #1	
Calibration Test		Calibration Test	
Learning Content:		Learning Content:	
1. Rules for interpreting chemical label information,		1. Read chemical label to determine application rate.	
2. Rules for setting up a calibration test		2. Set up a calibration test.	
3. Rules for calculating application rates		3. Calculate application rate.	
4. Rules for re-checking new adjustments,		4. Re-check new adjustments for accuracy.	
ST #2		ST #2	
Evaluating Pumping System		Evaluating Pumping System	
Learning Content:		Learning Content:	
1. Rules for determining leaks.		1. Fill tank.	
2. Rules for correcting leaks		2. Operate pump.	
		3. Search for leaks.	
		4. Tighten clamps and connections.	
		5. Replace worn parts.	
		6. Operate equipment.	
		7. Inspect agitation mechanism.	
		8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 6: Apply Liquid Chemicals With Boom Type Equipment (Continued)

ST #3

Apply Liquid Chemicals With Boom Type Equipment

Learning Content:

Rules for applying liquid chemicals with boom type equipment.

ST #3

Apply Liquid Chemicals With Boom Type Equipment

Learning Content:

1. Determine if chemical needs agitation during application. If so, activate agitator.
2. Determine spray width.
3. Re-check calibrations and application rates.
4. Determine the correct pattern of application.
5. Check equipment for proper operation.
6. Apply chemical.

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 7: Apply Liquid Chemicals With Band Type Equipment

Generalizable to all Tasks in the Preparation for and Application of Liquids Domain	Generalizable to the Apply Liquid Chemicals With Band Type Equipment Task	Transferrable to all Tasks in the Preparation for and Application of Liquids Domain	Transferrable to the Apply Liquid Chemicals With Band Type Equipment Task
ST #1 Calibration Test Learning Content: 1. Rules for interpreting chemical label information. 2. Rules for setting up a calibration test. 3. Rules for calculating application rates. 4. Rules for re-checking new adjustments		ST #1 Calibration Test Learning Content: 1. Read chemical label to determine application rate. 2. Set up a calibration test. 3. Calculate application rate. 4. Re-check new adjustments for accuracy.	
ST #2 Evaluating Pumping System Learning Content: 1. Rules for determining leaks. 2. Rules for correcting leaks		ST #2 Evaluating Pumping System Learning Content: 1. Fill tank. 2. Operate pump. 3. Search for leaks. 4. Tighten clamps and connections. 5. Replace worn parts. 6. Operate equipment. 7. Inspect agitation mechanism. 8. Make needed repairs.	

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

TASK 7: Apply Liquid Chemicals With Band Type Equipment (Continued)

	ST #3 Apply Liquid Chemicals With Band Type Equipment Learning Content: Rules for applying liquid chemicals with band type equipment.		ST #3 Apply Liquid Chemicals With Band Type Equipment Learning Content: 1. Determine if chemical needs agitation during application. If so, activate agitator. 2. Determine proper row spacing. 3. Re-check calibrations and application rates. 4. Check equipment for proper operation. 5. Apply chemical.

DATA SHEET A

CONTENT LIMITS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

Section I. Preparation of Equipment

- A. Dewinterizing Equipment
- B. Removing Air from Pump, Lines, and Hoses

Section II. Boom and Nozzle Adjustment

- A. Cleaning Nozzles, Screens, and Filters
- B. Adjusting Spray Pattern
    1. Wind drift
    2. Nozzle direction
- C. Adjusting Boom Height
    1. Wind drift
    2. Manufacturer's recommendations
    3. Chemical label directions
- D. Adjusting Boom Position
- E. Adjusting Row Spacings ans Width of Spray Area

Section III. Calibrate Spraying Equipment

- A. Nozzle Size
- B. Nozzle Output
- C. Pump Pressure
- D. Speed of Travel

Section IV. Calculating Proportions of Chemical and Carrying Agents

- A. Capacity of Sprayer Tank
- B. Volume Applied by Equipment Per Acre
- C. Amount of Chemical Recommended by Chemical Label
- D. Amount of Chemical to Mix with Carrying Agent to Get Desired Application Rate

Section V. Mix Chemical and Carrying Agent

A. Performing Compatability Test

B. Filling the Tank

C. Clean-up

1. Safety precautions according to label
2. Safety clothing and equipment
3. Storing unused chemicals
4. Rinsing empty containers
5. Disposing of empty containers

Section VI. Apply Liquid Chemical with Boom Type Equipment

A. Agitating During Application if Necessary

B. Checking Spray Width

C. Re-checking Calibration and Application Rates

D. Checking Pattern of Application

E. Checking Operation of Equipment

F. Applying Chemical

Section VIII. Apply Liquid Chemicals with Band Type Equipment

A. Agitating During Application if Necessary

B. Checking for Proper Row Spacing

C. Re-checking Calibration and Application Rates

D. Checking Operation of Equipment

E. Applying Chemical

DATA SHEET B

CONTENT LIMITS

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

Section I. Calibration Test

A. Interpreting Chemical Label

1. Recommended application rate
2. Recommended speed of travel
3. Recommended pump pressure
4. Recommended size and opening of nozzle

B. Setting Up Calibration Test

1. Measuring area for test
2. Measuring amount of chemical used in test

C. Calculating Application Rate

1. Amount of area covered
2. Amount of chemical used

D. Checking of New Adjustments

1. Performing repeated trial runs
2. Re-calculating actual application rate

Section II. Evaluating Pumping System

A. Determining Leaks

1. Filling tank
2. Operating pump

B. Correcting Leaks

1. Tightening clamps and connections
2. Replacing worn parts

PLANNING FORMAT

DRT 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3
4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 6.2, 6.3, 7.1, 7.2, and 7.3

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

Subtasks: Calibration Test
Evaluating Pumping System
Preparation of Equipment
Boom and Nozzle Adjustment
Calibrate Spraying Equipment
Calculating Proportions of Chemical and Carrying Agents
Mixing Chemical and Carrying Agent
Apply Liquid Chemicals with Boom Type Equipment
Apply Liquid Chemicals with Band Type Equipment

Content Limits

See Data Sheet A, Sections I, II, III, IV, V, VI, and VIII
See Data Sheet B, Sections I and II

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Sample liquid chemical label
2. Safety clothing and equipment
3. Boom type chemical sprayer
4. Band type chemical sprayer
5. Application rate for liquid chemicals
6. Measuring tools
7. Tools for adjusting applicators
8. Field for testing.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Reading a liquid chemical label and determining relevant application data and safety information
2. Dewinterizing liquid application equipment
3. Checking a pumping system for leaks
4. Correcting leaks if necessary
5. Adjusting a boom type applicator for a specific application rate
6. Adjusting a band type applicator for a specific application rate
7. Performing a calibration test for liquid type applicator
8. Performing new adjustments on applicator
9. Performing repeated calibration tests to re-check new adjustments
10. Calculating proportion of chemical to mix with carrying agent
11. Mixing chemical with carrying agent
12. Cleaning up and disposing of empty containers.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3,
4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 6.2, 6.3, 7.1, 7.2, and 7.3

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

For this test you will be required to perform the following:

1. Read a liquid chemical label and determine relevant application data and safety information.
2. Dewinterize a liquid applicator.
3. Check a pumping system for leaks.
4. Repair leaks if necessary.
5. Inspect and adjust a boom type applicator for a specific application rate.
6. Inspect and adjust a band type applicator for a specific application rate.
7. Perform a calibration test for liquid type applicator.
8. Perform new adjustments on applicator.
9. Perform repeated calibration tests to check new adjustments.
10. Calculate proportion of chemical to mix with carrying agent.
11. Mix a chemical with a carrying agent.
12. Clean up work area and dispose of empty containers.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3,
4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 6.2, 6.3, 7.1, 7.2, and 7.3

DOMAIN: PREPARATION FOR AND APPLICATION OF LIQUIDS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Read chemical label.
		2. Used approproiate safety clothing and equipment.
		3. Dewinterized applicator.
		4. Removed air from pump, lines, and hoses.
		5. Checked pumping system for leaks.
		6. Corrected leaks if necessary.
		7. Inspected and adjusted boom type applicator for a specific application rate:
		a. cleaned nozzles, screens, and filters
		b. adjusted spray pattern
		c. adjusted boom position
		d. adjusted row width and spacing.
		8. Inspected and adjusted band type applicator for a specific application rate.
		9. Performed calibration test.
		10. Performed new adjustments on applicator:
		a. adjusted nozzle size
		b. adjusted nozzle output
		c. adjusted pump pressure
		d. adjusted speed of travel.
		11. Performed repeated calibration tests to check new adjustments.
		12. Calculated proportion of chemical to mix with carrying agent.
		13. Mixed chemical with carrying agent.
		14. Cleaned up work area and disposed of empty containers.

A* = Acceptable U = Unacceptable

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 1: Prepare Dry Type Equipment for Use

PERFORMANCE OBJECTIVE

Given dry type equipment, oiler, 1/2" drive socket set, an open box end wrench set, screwdrivers, and a service manual, prepare the dry type equipment for use to conform to specifications set forth in the service manual so that the equipment is capable of meeting the two percent tolerance for application rate.

PERFORMANCE GUIDE

1. Determine that equipment is properly greased and oiled. Grease and oil equipment.
2. Determine the application rate from the label.
3. Adjust each applicator as directed by the operator's manual.
4. Fill each hopper one-half full.
5. Turn on applicators and operate until all are feeding.
6. Turn off applicators and disconnect each feed tube from the hopper. Attach a container such as a paper or plastic bag to the hopper openings.
7. Travel a measured distance at least 1/5km or 1/8 mile at anticipated speed during application.
8. Weigh and record the amount recovered from each hopper.
9. Determine the application rate from each applicator.
   a. check for variation in output exceeding five percent.
   b. check for worn or damaged parts.
10. If application rate is not correct, adjust feeder gate openings and recheck.

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 2: Prepare Broadcast Type Equipment for Use

PERFORMANCE OBJECTIVE

Given broadcast type equipment, oiler, open and wrench set, 1/2" drive socket set, screwdrivers, and a service manual, prepare the broadcast type equipment for use according to the manufacturer's specifications so that the equipment is capable of meeting the two percent tolerance of application rate.

PERFORMANCE GUIDE

1. Determine if the equipment is properly greased and oiled. Grease and oil equipment.
2. Determine the application rate from the chemical label.
3. Set the feeder gate cam to apply desired rate.
4. Mark the tank or hopper to a given level and fill to that mark.
5. Apply chemical to a measured area to be treated. Weigh the amount of pesticide required to refill the hopper to the mark.
6. Determine the application rate.
7. If application rate is not correct, adjust feeder gate opening and recheck.

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 3: Adjust Broadcast Type Equipment

PERFORMANCE OBJECTIVE

Given broadcast type equipment and an application rate, adjust the applicator to apply the chemical within a two percent tolerance.

PERFORMANCE GUIDE

1. Weigh mixed blend of granular chemical and determine chemical weight per volume.
2. Determine pounds per acre to apply.
3. Set correct endgate height.
4. Engage drive wheel.
5. Set PTO speed.
6. Spread chemical a small distance and check wind effect.
7. Recheck calibration.

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 4: Apply Dry Chemicals with Broadcast Equipment

PERFORMANCE OBJECTIVE

Given broadcast type equipment and application rate, apply dry chemical at the desired application rate within a two percent tolerance.

PERFORMANCE GUIDE

1. Determine speed and direction of wind.
2. Determine correct endgate height.
3. Determine correct pattern of application.
4. Determine correct speed to apply chemical.
5. Apply chemical.

TASK ANALYSIS

DOMAIN: **PREPARATION FOR AND APPLICATION OF DRY CHEMICALS**

I. Task 1: **Prepare Dry Type Equipment for Use.**

II. Task Performance Cue(s): **Employer asks you to prepare dry type equipment for use.**

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. **Determine the application rate from the label.**			2	
2. **Adjust each applicator as directed by the operator's manual.**			3	
3. **Fill each hopper one-half full.**			4	
4. **Turn on the applicators and operate until all are feeding.**			5	
5. **Turn off applicators and disconnect each feed tube from the hopper.**			6	
6. **Attach a container such as a paper or plastic bag to the hopper openings.**			7	
7. **Travel a measured distance (at least 1/5 kilometers or 1/8 mile) at speed you will travel during application.**			8	
8. **Weigh and record the amount recovered from each hopper. (total amounts of all hoppers)**			9	
9. **Calculate the application rate from each applicator.**			10	
10. **Is there a noticable variation in output.**	11	12		
11. **Check for worn or damaged parts.**			12	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
12. Unless instructions indicate otherwise calculate coverage as follows: $\text{Area covered in bands} = \frac{\text{Length of run x band width x number of bands}}{\text{size of area unit}}$ $\text{Application rate} = \frac{\text{amount collected}}{\text{area covered in bands}}$			13	
13. If application rate is not correct, adjust feeder-gate openings and recheck.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

I. Task 2: Prepare Broadcast Type Equipment for Use

II. Task Performance Cue(s): Employer asks you to prepare broadcast type chemical equipment for use.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the equipment properly greased and oiled?	3	2		
2. Grease and oil equipment.			3	
3. Determine the application rate from the chemical label.			4	
4. Set the feeder-gate cam to apply rate desired as suggested in operator's manual (gate should be closed while making adjustments to prevent spillage and to free the cam).			5	
5. Mark the tank or hopper at a given level and fill to the mark.			6	
6. Apply to a measured area to be treated (operate at a speed that is in keeping with ground conditions and the material to be spread. On some spinner broadcast spreaders faster travel spreads a wider swath. On all types, higher speeds spread the material at a lighter rate. only ground driven equipment would have a constant rate).			7	
7. Weigh the amount of pesticide required to refill the hopper to the mark.			8	
8. Determine the application rate by these two formulas: Area covered=$\frac{\text{No. of runs x length of run x width of application}}{\text{size of area unit}}$ Application rate=$\frac{\text{Amount applied}}{\text{Area covered}}$			9	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
9. If application rate is not correct, adjust feeder gate opening and recheck.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICASL

I. Task 3: Adjust Broadcast Type Equipment.

II. Task Performance Cue(s): You are asked by employer to adjust broadcast type equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the chemical granular?	2	EOT		
2. Is chemical to be put on by broadcast method?	3	EOT		
3. Has the application rate been determined?	6	4		
4. Has correct speed and endgate height been determined?	6	5	4	
5. Check tables to determine the correct speed and endgate height for the particular chemical.			6	
6. Is equipment working?	8	7		
7. Check all parts and make necessary repairs before continuing.			8	
8. Is rate of application correct?	10	9		
9. Recheck to make sure speed and endgate height is correct and that nothing is plugged.			10	
10. Apply chemical.			EOT	

TASK ANALYSIS

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

I. Task 4: Apply Dry Chemicals with Broadcast Equipment.

II. Task Performance Cue(s): Asked by employer to broadcast dry chemical.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the wind blowing?	2	3		
2. Determine the speed and direction of wind.			3	
3. Determine correct pattern of application.			4	
4. Has correct speed and endgate height been determined?	6	5		
5. Check tables to determine the correct speed and endgate height for the particular chemical.			6	
6. Is equipment working?	8	7		
7. Check all parts and make necessary repairs before continuing.			8	
8. Is rate of application correcc?	10	9		
9. Recheck to make sure speed and endgate height is correct and that nothing is plugged.			10	
10. Apply chemical.			EOT	

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 1: Prepare Dry Type Equipment for Use

Generalizable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Generalizable to the Prepare Dry Type Equipment for Use Task	Transferrable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Transferrable to the Prepare Dry Type Equipment for Use Task
ST #1		ST #1	
Lubrication		Lubrication	
Learning Content:		Learning Content:	
Rules for keeping equipment properly lubricated.		1. Inspect equipment for lubrication needs. 2. Grease and oil equipment.	
ST #2	ST # 3	ST #2	ST # 3
Calibration Test	Calibrating Dry Type Equipment	Calibration Test	Calibrating Dry Type Equipment
Learning Content:	Learning Content:	Learning Content:	Learning Content:
1. Rules for interpreting chemical label information.	1. Rules for operating applicators.	1. Read chemical label to determine application rate	1. Operate applicator.
2. Rules for setting up a calibration test.	2. Rules for weighing the amount from each hopper.	2. Set up a calibration test.	2. Turn off applicator.
3. Rules for calculating application rate.	3. Rules for repairing or replacing worn or broken parts.	3. Calculate application rate.	3. Remove hoses and attach containers for calibration test.
4. Rules for re-checking new adjustments.	4. Rules for adjusting feeder-gate openings for correct application rate.	4. Re-check new adjustments for accuracy.	4. Check the flow from each outlet.
			5. Repair or replace worn or broken parts.
			6. Adjust feeder gate openings to regulate flow.

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 2: Prepare Broadcast Type Equipment for Use

Generalizable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Generalizable to the Prepare Broadcast Type Equipment for Use Task	Transferrable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Transferrable to the Prepare Broadcast Type Equipment for Use Task
ST #1		ST #1	
Lubrication		Lubrication	
Learning Content:		Learning Content:	
Rules for keeping equipment properly lubricated.		1. Inspect equipment for lubrication needs.	
		2. Grease and oil equipment.	
ST #2	ST # 3	ST #2	ST # 3
Calibration Test	Calibrating Broadcast Type Equipment	Calibration Test	Calibrating Broadcast Type Equipment
Learning Content:	Learning Content:	Learning Content:	Learning Content:
1. Rules for interpreting chemical label information.	1. Rules for operating spinner broadcaster.	1. Read chemical label to determine application rate.	1. Operate spinner broadcaster.
2. Rules for setting up a calibration test.	2. Rules for weighing the amount from each hopper.	2. Set up a calibration test.	2. Turn off spinner.
3. Rules for calculating application rate.	3. Rules for repairing or replacing broken parts.	3. Calculate application rate.	3. Apply chemical on a specified area for calibration test.
4. Rules for re-checking new adjustemnts.	4. Rules for making adjustments to correct application rate.	4. Re-check new adjustments for accuracy.	4. Repair or replace worn or broken parts.
			5. Adjust feeder gate openings to regulate flow.

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 3: Adjust Broadcast Type Equipment

Generalizable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Generalizable to the Adjust Broadcast Type Equipment Task	Transferrable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Transferrable to the Adjust Broadcast Type Equipment Task
ST #1 Lubrication Learning Content: Rules for keeping equipment properly lubricated.		ST #1 Lubrication Learning Content: 1. Inspect equipment for lubrication needs. 2. Grease and oil equipment.	
ST #2 Calibration Test Learning Content: 1. Rules for interpreting chemical label information. 2. Rules for setting up a calibration test. 3. Rules for calculating application rate. 4. Rules for re-checking new adjustments.	ST # 3 Adjusting Broadcast Type Equipment Learning Content: Rules for adjusting broadcast type equipment.	ST #2 Calibration Test Learning Content: 1. Read chemical label to determine application rate. 2. Set up a calibration test. 3. Calculate application rate. 4. Re-check new adjustments for accuracy.	ST # 3 Adjusting Broadcast Type Equipment Learning Content: 1. Set PTO speed or engage drive wheel. 2. Set correct speed of travel. 3. Set correct feeder gate opening.

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

TASK 4: Apply Dry Chemical With Broadcast Equipment

Generalizable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Generalizable to the Apply Dry Chemical With Broadcast Equipment Task	Transferrable to all Tasks in the Preparation for and Application of Dry Chemicals Domain	Transferrable to the Apply Dry Chemical With Broadcast Equipment Task
ST #1 Lubrication Learning Content: Rules for keeping equipment properly lubricated.		ST #1 Lubrication Learning Content: 1. Inspect equipment for lubrication needs. 2. Grease and oil equipment.	
ST #2 Calibration Test Learning Content: 1. Rules for interpreting chemical label information. 2. Rules for setting up a calibration test. 3. Rules for calculating application rate. 4. Rules for re-checking new adjustments.	ST # 3 Applying Dry Chemical with Broadcast Type Equipment Learning Content: Rules for applying dry chemicals.	ST #2 Calibration Test Learning Content: 1. Read chemical label to determine application rate. 2. Set up a calibration test. 3. Calculate application rate. 4. Re-check new adjustments for accuracy.	ST # 3 Applying Dry Chemicals with Broadcast Type Equipment Learning Content: 1. Determine speed and direction of the wind. 2. Determine the correct pattern of application. 3. Check feeder-gate opening, PTO speed or drive chain, and speed of travel. 4. Check equipment for proper operation.

DATA SHEET A

CONTENT LIMITS

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

Section I. Calibrating Dry Type Equipment

A. Chekcing Applicator Operation

B. Repairing or Replacing Worn or Broken Parts

C. Removing Hoses and Attaching Containers to Calibrate

D. Checking Flow from Each Opening

E. Weighing Amount Used in Each Hopper

F. Adjusting Feeder Gate Openings to Regulate Flow

Section II. Calibrating Broadcast Type Equipment

A. Checking Spinner Operation

B. Repairing or Replacing Worn or Broken Parts

C. Applying Chemical on Specified Area for Calibration

D. Weighing Amount Used in Hopper

E. Adjusting Feeder Gate Openings to Regulate Flow

Section III. Adjusting Broadcast Type Equipment

A. Setting PTO Speed or Engaging Drive Wheel

B. Setting Correct Speed of Travel

C. Setting Correct Feeder Gate Opening

Section IV. Applying Dry Chemical with Broadcast Type Equipment

A. Determining Speed and Direction of Wind

B. Determining the Correct Pattern of Application

C. Checking Feeder Gate Opening, PTO Speed or Drive Chain, and Speed of Travel

D. Checking Equipment for Proper Operation

DATA SHEET B

CONTENT LIMITS

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

Section I. Lubrication

- A. Inspection to Determine Need
- B. Greasing
- C. Oiling

Section II. Calibration Test

- A. Interpreting Chemical Label
    1. Recommended application rate
    2. Recommended feeder gate opening
    3. Recommended PTO speed
    4. Recommended speed of travel
- B. Setting Up Calibration Test
    1. Measuring area for test
    2. Measuring amount of chemical used in the test
- C. Calculating Application Rate
    1. Amount of area covered
    2. Amount of chemical used
- D. Checking of New Adjustments
    1. Performing repeated tests
    2. Re-calculating actual rates

PLANNING FORMAT

DRT 1.0, 2.0, 3.0, and 4.0

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

Subtasks: Lubrication
Calibration Test
Calibrating Dry Type Equipment
Calibrating Broadcast Type Equipment
Adjusting Broadcast Type Equipment
Applying Dry Chemical With Broadcast Type Equipment

Content Limits

See Data Sheet A, Sections I, II, III, and IV.
See Data Sheet B, Sections I, and II.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Sample dry chemical label
2. Safety clothing and equipment
3. Lubricating equipment
4. Dry type chemical applicator
5. Broadcast type chemical applicator
6. Application rate for a dry chemical
7. Measuring tools
8. Tools for adjusting applicators
9. Field for testing.

Test Response Characteristics

The student will demonstrate the concepts, principles, and procedures involved in:

1. Reading a dry chemical label and determining relevant application data and safety information
2. Lubricating a chemical applicator
3. Adjusting a dry type chemical applicator for a specific application rate
4. Adjusting a broadcast type chemical applicator for a specific application rate
5. Performing a calibration test for dry type equipment
6. Performing a calibration test for broadcast type equipment
7. Performing new adjustments on applicating equipment
8. Performing repeated calibration tests to re-check new adjustments.

EXAMINEE INSTRUCTIONS

DRT 1.0, 2.0, 3.0, and 4.0

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

For this test you will be required to perform the following:

1. Read a dry chemical label and determine relevant application data and safety information.
2. Lubricate a chemical applicator.
3. Inspect and adjust a dry type chemical applicator for a specific application rate.
4. Inspect and adjust a broadcast type applicator for a specific application rate.
5. Perform a calibration test for dry type equipment.
6. Perform a calibration test for broadcast type equipment.
7. Perform new adjustments on applicating equipment.
8. Perform repeated calibration tests to re-check new adjustments.

PERFORMANCE CHECKLIST

DRT 1.0, 2.0, 3.0. and 4.0

DOMAIN: PREPARATION FOR AND APPLICATION OF DRY CHEMICALS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Read chemical label.
		2. Used appropriate safety clothing and equipment.
		3. Lubricated chemical applicator.
		4. Inspected and made adjustements on dry type applicator.
		a. repaired or replaced worn or broken parts
		b. removed hoses and attached containers to calibrate
		5. Inspected and made adjustements on broadcast type applicator.
		a. checked spinner operation
		b. repaired or replaced worn or broken parts
		c. checked flow through feeder gate
		6. Performed calibration test.
		a. measured area for test
		b. measured amount of chemical used in test
		c. considered direction and speed of wind in determining pattern of application
		7. Performed new adjustments on applicator.
		8. Performed repeated calibration tests.
		9. Made final actual application rate that is accurate within a two-percent tolerance of recommended application rate.

A* = Acceptable
U = Unacceptable

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 1: Clean Liquid Application Equipment

PERFORMANCE OBJECTIVE

Given proper cleaning materials and liquid chemical application equipment, clean the equipment. All components cleaned must meet the performance checklist standards.

PERFORMANCE GUIDE

1. Wear appropriate safety clothing.
2. Check label for any specific instructions.
3. Select a safe place for cleaning and flushing.
4. Determine that tank is empty.
5. Wash and flush out tank.
6. Lubricate where necessary.

PERFORMANCE CHECKLIST

DOMAIN: INSPECITON AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 1: Clean Liquid Applicating Equipment

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Checked label of chemical applied for any specific instructions.
		2. Wore appropriate safety clothing.
		3. Selected a safe place for cleaning and flushing.
		4. Determined that tank was empty.
		5. Disposed of any leftover chemicals properly.
		6. Washed and flushed out the tank.
		7. Lubricated where necessary.

A* = Acceptable
U = Unacceptable

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 2: Inspect Boom Type Equipment for Damaged Parts

PERFORMANCE OBJECTIVE

Provided boom type equipment, visually inspect the complete boom system for wear, defects, broken or missing components, rust corrosion, and cracks. All defects and problems identified by the instructor must be recognized and reported.

PERFORMANCE GUIDE

1. Determine that clamps connecting outer sections of boom are not excessively worn and are tightened.
2. Determine that U-bolts on the tension rod clamp are not excessively worn.
3. Determine that there are no cracks in any welds on the boom.
4. Make sure boom is straight, not bent.
5. Make sure there are no cracks in conduit on boom.
6. Determine that all accessory lights and warning devices are operational.
7. Make sure U-bar which secures outer booms back is not excessively worn.
8. Make sure pins placed in transport bar are not excessively worn.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 3: Straighten Bent Booms

PERFORMANCE OBJECTIVE

Provided a bent boom, a vise, two pound hammer, propane torch, ½" drive socket set, a box end wrench set, and penetrating oil, straighten any bends in the boom. Upon completion, all bent areas identified by the instructor will have been straightened.

PERFORMANCE GUIDE

1. Determine if the tubing will return to its natural shape if the clamps are removed.
    a. remove clamps to return shape to normal
    b. replace the clamps
2. Remove boom and place in a vise. Heat the bent area and try to straighten manually.
3. Replace straightened boom on equipment.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 4: Weld Breakages in Boom

PERFORMANCE OBJECTIVE

Given a boom that has been cracked or broken, access to an arc or gas welder and welding supplies, weld the breakages. Upon completion, any breakages identified by the instructor will have been welded in such a manner that there will be no leaks.

PERFORMANCE GUIDE

1. Clean the metal joints to be welded of all rust, scale, paint, dirt, oil, and see that the area is dry.
2. Take proper safety precautions.
   a. wear proper protective clothing
   b. keep all combustible materials a safe distance away
   c. keep fire fighting equipment handy at all times
   d. weld in a properly ventilated area
3. Bevel the metal joints before welding, if over ¼" thick.
4. Weld joint.
5. Clean away slag from the weld and inspect it.
6. Test boom for and correct any leaks.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 5: Replace Booms

PERFORMANCE OBJECTIVE

Provided booms, a service manual, replacement parts, hoses, clamps, screwdrivers, a 3/8" drive socket set, knife, pipe wrenches, a set of open box end wrenches, replace the booms following the manufacturer's specifications and procedures. When completed, the boom will function freely.

PERFORMANCE GUIDE

1. Remove old boom from boom frame brackets on the tank frame.
2. Determine that boom frame brackets are bolted securely to the tank frame.
3. Determine height from which new boom is to be operated.
4. Bolt the boom center section to the boom frame brackets.
5. Hook the boom hinge for right and left side in slot.
6. Place the chain through the boom hinge and secure it with quick-lock pin.
7. Pull the hinge to the rear and place a screwdriver through the chain approximately seven links from the end.
8. Place the boom hinge back in the straight position and pull the chain through the hinge and place a quick-lock pin in the third link.
9. Attach the boom to the boom hinge.
10. Attach the boom support braces to the boom and boom center section.
11. Position spacer in upper boom brace and bolt in place.
12. Adjust the boom support braces so the outer booms are level.
13. Remove bolt from center section boom and swing out.
14. Attach the nozzles to the boom frame.
15. Cut the hoses to fit between nozzles and clamp to nozzles.
16. Clamp the in-line strainers to the center section frame.
17. Cut and clamp hose from strainer to nozzle.
18. Clamp delivery hoses to other end of strainer.
19. Clamp the delivery hoses to each side of tank frame.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 6: Replace Liquid Hoses

PERFORMANCE OBJECTIVE

Given chemical applicating equipment with defective liquid hoses, and the replacement hoses, clamps, knife, screwdriver, a ¼" drive socket set, cutting pliers, combination pliers, and service manual, identify the defective liquid hoses and replace them in accordance with the manufacturer's procedures. Upon completion, there will be no leaks in the hoses.

PERFORMANCE GUIDE

1. Loosen hose clamps at both ends of hose.
2. Take off old hose.
3. Select proper replacement hose for most corrosive chemical to be used.
   a. atch the hose to the job indicated-section, discharge, or clear sight
   b. atch the hose for nitrogen resistance, Lasso resistance, burst pressure and working pressure rate
4. Place new hose in position.
5. Tighten hose clamps at both ends.
6. Check for and correct any leaks.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 7: Replace Hose Clamps

PERFORMANCE OBJECTIVE

Given new replacement hose clamps, screwdriver, ¼" drive socket set, cutting pliers, combination pliers, and a service manual, remove and replace the old hose clamps in accordance with the manufacturer's recommended procedures. When completed, there will be no leaks in the hoses, lines, and fittings.

PERFORMANCE GUIDE

1. Screw off old hose clamp.
2. Place on new hose clamp.
3. Screw new hose clamp until tight.
4. Check for and correct any leaks.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 8: Clean Clogged Screens

PERFORMANCE OBJECTIVE

Given a clogged screen, soap, water and an old toothbrush, clean the screens so that all foreign material and chemical residue are removed.

PERFORMANCE GUIDE

1. Remove nozzle tips.
   a. wash tips and screens thoroughly with soapy water and an old toothbrush.
   b. blow out orifice in nozzle tips.
2. Replace screen and nozzle on sprayer.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 9: Replace Screens and Filters

PERFORMANCE OBJECTIVE

Given a piece of equipment with screens and filters, pipe wrenches, screwdriver, combination pliers, adjustable end wrenches, service manual and replacement screens and filters, remove and replace the screens and filters in accordance with the manufacturer's recommended procedure. When completed, there will be no obstructions in the screens and filters.

PERFORMANCE GUIDE

1. Remove nozzle.
2. Take out old screens and filters.
3. Select replacement screens and filters to be matched for the use requirement considering mesh and construction.
4. Put in new screens and filters.
5. Replace nozzle.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 10: Change Nozzles on Applicators

PERFORMANCE OBJECTIVE

Given new nozzles for applicators, a service manual, a pipe wrench, and an adjustible end wrench, replace the nozzles on an applicator. The new nozzles will function so that the spray pattern meets operation specification.

PERFORMANCE GUIDE

1. Unscrew defective nozzle from applicator.
2. Select replacement nozzle to give desired droplet size and application rate within the recommended range of pressures.
3. Determine the type of metal or material desired.
4. Screw in new nozzle and align with proper orientation.

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 1: Clean Liquid Application Equipment.

II. Task Performance Cue(s): Employer asks you to clean liquid application equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Wear safety clothing and equipment.			2	
2. Check label for any specific instructions.			3	
3. Select safe place for cleaning and flushing.			4	
4. Is tank empty?	6	5		
5. Empty tank in a safe way.			6	
6. Wash tank.			7	
7. Lubricate where necessary.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 2: Inspect Boom Type Equipment for Damaged Parts.

II. Task Performance Cue(s): Employer asks you to inspect boom type applicating equipment for damaged parts.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is boom extended?	3	2		
2. Extend boom.			3	
3. Make sure clamps connecting center and outer sections of boom are not excessively worn and are tightened.			4	
4. Make sure U-bolts on the tension rod clamp are not excessively worn.			5	
5. Make sure there are no cracks in any welds on the boom.			6	
6. Make sure boom is straightened, not bent.			7	
7. Make sure there are no cracks in conduit on boom.			8	
8. Make sure all accessory lights and warning devices are operational.			9	
9. Make sure U-bar which secures outer booms back is not excessively worn.			10	
10. Make sure pins placed in transport bar are not excessively worn.			11	
11. Secure booms in transport position.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 3: Straighten Bent Boom.

II. Task Performance Cue(s): Employer asks you to straighten bent boom.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Will the tubing return to its natural shape if the clamps are removed?	2	4		
2. Remove clamps to return shape to normal.			3	
3. Replace the clamps.			EOT	
4. Remove boom and place in a vise.			5	
5. Use a torch to heat the bent area and straighten manually.			6	
6. Replace straightened boom on equipment.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 4: **Weld Breakages in Boom.**

II. Task Performance Cue(s): **Employer asks you to weld breakages in boom.**

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. **Keep all combustible materials at a safe distance.**			2	
2. **Do not wear gloves or other clothing which contains oil or grease.**			3	
3. **Keep fire fighting equipment handy at all times.**			4	
4. **Clean the metal joints to be welded of rust, scale, paint, dirt, especially oil (also that they are dry).**			5	
5. **Unless metal is very thin, bevel the metal joints.**			6	
6. **Proceed to weld by keeping puddles small.**			7	
7. **Clean away slag from weld to inspect it.**			8	
8. **Test weld for spirating strength.**			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 5: Replace Booms.

II. Task Performance Cue(s): Employer asks you to replace booms.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does boom need to be replaced?	2	EOT		
2. Remove old boom from boom frame brackets on the tank frame.			3	
3. Make sure boom frame brackets are bolted securely to tank frame.			4	
4. Determine height which new boom is to be operated.			5	
5. Bolt the boom center section to the boom frame brackets.			6	
6. Hook the boom hinge for right and left side in a slot.			7	
7. Place the chain through the boom hinge and secure it with a quik-lock pin.			8	
8. Pull the hinge to the rear and place a screwdriver through the chain 7 links from the end.			9	
9. Place the boom hinge back in the straight and place a quik-lock pin in the third link.			10	
10. Attach the boom to the boom hinge.			11	
11. Attach the boom support braces to the boom and boom center section.			12	
12. Position spacer in upper boom brace and bolt in place.			13	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
13. Adjust the boom support braces so the outer booms are level.			14	
14. Remove bolt from center section boom and swing out.			15	
15. Attach the nozzles to the boom frame.			16	
16. Cut the hoses to fit between nozzles and clamp to nozzles.			17	
17. Clamp the in-line strainers to the center section frame.			18	
18. Cut and clamp hose from strainer to nozzle.			19	
19. Clamp delivery hose to other end of strainer.			20	
20. Clamp the delivery hoses to each side of tank frame.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 6: Replace Liquid Hoses.

II. Task Performance Cue(s): Employer asks you to replace liquid hoses.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Loosen hose clamps at both ends of hose.			2	
2. Take off old hose.			3	
3. Use old hose to help measure the new hose length and diameter. Select proper replacement hose for most corrosive chemical to be used-match the hose to the job indicated-suction, discharge, or clear burst pressure and working pressure ratings.			4	
4. Place new hose in position.			5	
5. Tighten hose clamps at both ends.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 7: Replace Hose Clamps.

II. Task Performance Cue(s): Employer asks you to replace hose clamps.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Screw off old hose clamp.			2	
2. Place on new hose clamp.			3	
3. Screw new hose clamp until tight.			4	
4. Test hoses for leaks.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 8: Clean Clogged Screens.

II. Task Performance Cue(s): Employer asks you to clean clogged screens.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Remove nozzle tips.			2	
2. Wash the tips and screens thoroughly with soapy water and old tooth brush.			3	
3. Blow out orifice in nozzle tips with water or air compressor.			4	
4. Is opening still clogged?	5	6		
5. Use toothpick of wood to clean opening.			6	
6. Put screen and nozzle back in sprayer.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 9: Replace Screens and Filters.

II. Task Performance Cue(s): Employer asks you to replace screens and filters.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Remove nozzle.			2	
2. Take out old screens and filters.			3	
3. Select replacement screens and filters to be matched for the use requirement considering mesh and construction material needed to resist the chemical.			4	
4. Use stainless steel where possible to resist corrosion.			5	
5. Put in new screens and filters.			6	
6. Replace nozzle.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

I. Task 10: Change Nozzles on Applicators.

II. Task Performance Cue(s): Employer asks you to change nozzles on applicators.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Do nozzles on applicator need to be replaced?	2	EOT		
2. Unscrew defective nozzles from applicator.			3	
3. Select replacement nozzles to give desired droplet size and application rate within the recommended range of pressures.			4	
4. Determine which material (brass, aluminum, nylon, stainless steel, hardened stainless steel, chrome plate brass, brass with a tungsten carbide orifice, or ceramic) the nozzle should be made of.			5	
5. Screw in new nozzle and align with proper orientation.			EOT	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 1: Clean Liquid Application Equipment

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Clean Liquid Application Equipment Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Clean Liquid Application Equipment Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened. 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn. 3. Rules for determining if there are cracks in any welds on the boom. 4. Rules for determining if boom is straightened, not bent. 5. Rules for determining if there are any cracks in the conduit on boom. 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc, for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 1: Clean Liquid Application Equipment (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn 9. Rules for determining if pins placed in transport bar are not excessively worn 10. Rules for determining if equipment needs cleaning 11. Rules for determining if hoses are leaking 12. Rules for determining if nozzles are excessively worn 13. Rules for determining if nozzles are in need of cleaning or replacing			
	ST #2 Safety Learning Content: 1. Rules for wearing safety clothing and equipment 2. Rules for interpreting label directions 3. Rules for selecting a safe place for cleaning and flushing		ST #2 Safety Learning Content: 1. Interpret label. 2. Wear appropriate safety clothing. 3. Select cleaning site.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 1: Clean Liquid Application Equipment (Continued)

	ST #3 Cleaning Learning Content: 1. Rules for emptying tank 2. Rules for washing tank 3. Rules for lubricating where necessary		ST #3 Cleaning Learning Content: 1. Read label. 2. Select safety equipment. 3. Wear safety equipment. 4. Select safe cleaning location. 5. Empty tanks and store or dispose of left over chemicals properly. 6. Lubricate equipment. 7. Clean up.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 2: Inspect Boom type Equipment for Damaged Parts

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Inspect Boom Type Equipment for Damaged Parts Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Inspect Boom Type Equipment for Damaged Parts Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn, 3. Rules for determining if there are cracks in any welds on the boom, 4. Rules for determining if boom is straightened, not bent. 5. Rules for determining if there are any cracks in the conduit on boom, 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 2: Inspect Boom Type Equipment for Damaged Parts (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn.		
9. Rules for determining if pins placed in transport bar are not excessively worn.		
10. Rules for determining if equipment needs cleaning.		
11. Rules for determining if hoses are leaking.		
12. Rules for determining if nozzles are excessively worn.		
13. Rules for determining if nozzles need cleaning or replacing.		

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 3: Straighten Bent Boom

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to the Straighten Bent Boom Task	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to the Straighten Bent Boom Task
ST #1 Inspection Learnign Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened, 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn, 3. Rules for determining if there are cracks in any welds on the boom, 4. Rules for determining if boom is straightened, not bent, 5. Rules for determining if there are nay cracks in the conduit on boom, 6. Rules for determining if booms need to be replaced, 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 3: Straighten Bent Boom (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn. 9. Rules for determining if pins placed in transport bar are not excessively worn. 10. Rules for determining if equipment needs cleaning. 11. Rules for determining if hoses are leaking. 12. Rules for determining if nozzles are excessively worn. 13. Rules for determining if nozzles are in need of cleaning or replacing.			
	ST #2 Straighten by Removing Clamps Learning Content: Rules for determining if tubing will return to its natural shape if the clamps are removed,		ST #2 Straighten by Removing Clamps Learning Content: 1. Remove clamps. 2. Replace clamps.
	ST #3 Straighten by Torch Learning Content: 1. Rules for removing boom and place is a vise.		ST #3 Straighten by Torch Learning Content 1. Use vise to hold the boom. 2 Heat by torch to straighten.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 3: Straighten Bent Boom (Continued)

	2. Rules for heating and straightening booms. 3. Rules for replacing booms.		3. Reassemble the booms.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 4: Weld Breakages in Boom

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Weld Breakages in Boom Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Weld Breakages in Boom Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened. 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn. 3. Rules for determining if there are cracks in any welds on the boom. 4. Rules for determining if boom is straightened, not bent. 5. Rules for determining if there are any cracks in the conduit on boom. 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 4: Weld Breakages in Boom (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn, 9. Rules for determining if pins placed in transport bar are not excessively worn, 10. Rules for determining if equipment needs cleaning, 11. Rules for determining if hoses are leaking, 12. Rules for determining if nozzles are excessively worn, 13. Rules for determining if nozzles are in need of cleaning or replacing,			
	ST #2 Safety Learning Content: Rules for storing combustible materials,		ST #2 Safety Learning Content: 1. Prepare welding area. 2. Store combustible materials at a safe distance. 3. Wear clothing free of oil or grease. 4. Keep fire fighting equipment handy.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 4: Weld Breakages in Booms (Continued)

ST #3

Preparation of Boom

Learning Content:

1. Rules for cleaning joints to be welded.
2. Rules for bevelling the metal unless the metal is very thin.
3. Rules for welding.

ST #4

Inspection of Weld

Learning Content:

Rules for inspecting the weld.

ST #3

Preparation of Boom

Learning Content:

1. Prepare parts to be welded.
2. Select proper electrode or rod and flux.
3. Set proper amperage or pressure.
4. Weld

ST #4

Inspection of Weld

Learning Content:

1. Clean welded area.
2. Check for strength.
3. Check for leaks.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 5: Replace Booms

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generazible to all Replace Booms Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Replace Booms Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened. 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn. 3. Rules for determining if there are cracks in any welds on the boom, 4. Rules for determining if boom is straightened, not bent, 5. Rules for determining if there are any cracks in the conduit on boom, 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc, for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 5: Replace Booms (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn, 9. Rules for determining if pins placed in transport bar are not excessively worn, 10. Rules for determining if equipment needs cleaning, 11. Rules for determining if hoses are leaking, 12. Rules for determining if nozzles are excessively worn, 13. Rules for determining if nozzles are in need of cleaning or replacing,			
	ST #2 Removing Booms 1. Rules for removing old boom from boom frame brackets on the tank frame. 2. Rules for determining height which new boom is to be operated,		ST #2 Removing Booms Learning Content: 1. Inspect booms for wear and damage. 2. Remove old booms. 3. Replace with new booms. 4. Set height of boom.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 5: Replace Booms (Continued)

	ST #3 Replace Booms Learning Content: Rules for replacing booms.		ST #3 Replace Booms Learning Content: 1. Bolt boom to boom frame. 2. Hook boom hinges. 3. Hook boom chain. 4. Attach boom to hinges. 5. Level booms. 6. Attach nozzles.
	ST #4 Replace Hoses Learning Content: Rules for replacing hoses,		ST #4 Replace Hoses Learning Content: 1. Inspect hoses for wear and ageing. 2. Remove old hoses, strainers, etc. 3. Replace hoses and reinstall strainers at proper locations. 4. Attach clamps. 5. Clean up.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 6: Replace Liquid Hoses

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Replace Liquid Hoses Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Replace Liquid Hoses Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened. 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn. 3. Rules for determining if there are cracks in any welds on the boom. 4. Rules for determining if boom is straightened, not bent. 5. Rules for determining if there are any cracks in the conduit on boom. 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 6: Replace Liquid Hoses (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn. 9. Rules for determining if pins placed in transport bar are not excessively worn, 10. Rules for determining if equipment needs cleaning, 11. Rules for determining if hoses are leaking, 12. Rules for determining if nozzles are excessively worn, 13. Rules for determining if nozzles are in need of cleaning or replacing,			
	ST #2 Remove Hoses Learning Content: 1. Rules for removing hoses, 2. Rules for selecting proper replacement hose.		ST #2 Remove Hoses Learning Content: 1. Inspect hoses. 2. Remove worn or defective hoses. 3. Cut new hoses to length as measured. 4. Select proper replacement hoses.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 6: Replace Liquid Hoses (Continued)

ST #3

Replace Hoses

Learning Content:

Rules for replacing hoses

ST #3

Replace Hoses

Learning Content:

1. Reinstall hoses and clamps.
2. Check for leaks.
3. Clean up.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 7: Replace Hose Clamps

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Replace Hose Clamps Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Replace Hose Clamps Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and or tightened, 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn, 3. Rules for determining if there are cracks in any welds on the boom, 4. Rules for determining if boom is straightened, not bent, 5. Rules for determining if there are any cracks in the conduit on boom, 6. Rules for determining if booms need to be replaced, 7. Rules for determining if all accessory lights and warning devices are operational,		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 7: Replace Hose Clamps (Continued)

8. Rules for determining if U bar which secures outer booms back in not excessively worn, 9. Rules for determining if pins placed in transport bar are not excessively worn, 10. Rules for determining if equipment needs cleaning, 11. Rules for determining if hoses are leaking, 12. Rules for determining if nozzles are excessively worn, 13. Rules for determining if nozzles are in need of cleaning or replacing.			
	ST #2 Replacing Clamps Learning Content: Rules for replacing clamps,		ST #2 Replacing Clamps Learning Content: 1. Inspect clamps. 2. Repair or replace clamps. 3. Check tighteners. 4. Check for leaks.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 8: Clean Clogged Screens

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Clean Clogged Screens Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Clean Clogged Screens Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and/or tightened, 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn, 3. Rules for determining if there are cracks in any welds on the boom, 4. Rules for determining if boom is straightened, not bent, 5. Rules for determining if there are any cracks in the conduit on boom, 6. Rules for determining if booms need to be replaced, 7. Rules for determining if all accessory lights and warning devices are operational;		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc, for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 8: Clean Clogged Screens (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn, 9. Rules for determining if pins placed in transport bar are not excessively worn, 10. Rules for determining if equipment needs cleaning. 11. Rules for determining if hoses are leaking, 12. Rules for determining if nozzles are excessively worn, 13. Rules for determining if nozzles are in need of cleaning or replacing,			
	ST #2 Cleaning Screens Learning Content: 1. Rules for removing screens. 2. Rules for washing. 3. Rules for replacing screens.		ST #2 Cleaning Screens Learning Content: 1. Remove nozzles. 2. Inspect nozzles. 3. Clean nozzles. 4. Determine wear of nozzle. 5. Replace nozzles and screens when needed. 6. Clean up.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 9: Replace Screens and Filters

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Replace Screens and Filters Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Replace Screens and Filters Tasks
ST #1		ST #1	
Inspection		Inspection	
Learning Content:		Learning Content:	
1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and/or tightened. 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn. 3. Rules for determining if there are cracks in any welds on the boom. 4. Rules for determining if boom is straightened, not bent. 5. Rules for determining if there are any cracks in the conduit on boom. 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or we[illegible] needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 9: Replace Screens and Filters (Continued)

8. Rules for determining if U bar which secures outer booms back is not excessively worn, 9. Rules for determining if pins placed in transport bar are not excessively worn, 10. Rules for determining if equipment needs cleaning, 11. Rules for determining if hoses are leaking, 12. Rules for determining if nozzles are excessively worn, 13. Rules for determining if nozzles are in need of cleaning or replacing.			
	ST #2 Removing Screens and Filters Learning Content: 1. Rules for removing screens and filters, 2. Rules for selecting replacement screens and filters.		ST #2 Removing Screens and Filters Learning Content: 1. Remove nozzles. 2. Inspect screens and filters. 3. Clean or replace as needed. 4. Select according to materials used.
	ST #3 Replace Screens and Filters Learning Content: Rules for replacing screens and filters,		ST #3 Replace Screens and Filters Learning Content: Replace nozzles.

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 10: Change Nozzles on Applicators

Generalizable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Generalizable to all Change Nozzles on Applicators Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Liquid Equipment Domain	Transferrable to all Change Nozzles on Applicators Tasks
ST #1 Inspection Learning Content: 1. Rules for determining if connecting center and outer sections of the boom are not excessively worn and/or tightened. 2. Rules for determining if U bolts on the tension rod clamp are not excessively worn. 3. Rules for determining if there are cracks in any welds on the boom. 4. Rules for determining if boom is straightened, not bent. 5. Rules for determining if there are any cracks in the conduit on boom. 6. Rules for determining if booms need to be replaced. 7. Rules for determining if all accessory lights and warning devices are operational.		ST #1 Inspection Learning Content: 1. Inspect boom clamps. 2. Tighten as required or replace if needed. 3. Inspect U bolts for wear and tighten or replace as needed. 4. Inspect booms for wear or cracks and bends. 5. Repair or weld as needed. 6. Extend boom. 7. Put boom in transport position. 8. Inspect lights etc. for proper operation and repair or replace as needed. 9. Inspect transport pins for wear and replace if needed. 10. Inspect nozzles. 11. Inspect hoses. 12. Clean equipment if needed.	

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

TASK 10: Change Nozzles on Applicators (Continued)

8. Rules for determining if bar which secures outer booms back is not excessively worn. 9. Rules for determining if pins placed in transport bar are not excessively worn. 10. Rules for determining if equipment needs cleaning. 11. Rules for determining if hoses are leaking. 12. Rules for determining if nozzles are excessively worn. 13. Rules for determining if nozzles are in need of cleaning or replacing.			
	ST #2 Changing Nozzle Learning Content: 1. Rules for removing defective nozzle from applicator. 2. Rules for selecting replacement nozzle. 3. Rules for determining the type of metal or material you want to nozzle to be. 4. Rules for replacing new nozzle.		ST #2 Changing Nozzle Learning Content: 1. Select proper nozzle for replacement. 2. Inspect nozzle. 3. Repair nozzle. 4. Replace nozzle. 5. Identify nozzle. 6. Align nozzle.

DATA SHEET A

CONTENT LIMITS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

Section I. Clean Liquid Application Equipment

- A. Safety
  - 1. Use safe area
  - 2. Wear safety equipment
- B. Emptying Tank
  - 1. Store chemical
  - 2. Dispose of chemical in accord with label directions
- C. Washing Tank
- D. Lubricate as Necessary

Section II. Straighten Bent Boom

- A. Straighten by Removing Clamps
- B. Straighten By Torch and Heating in a Vise

Section III. Weld Breakages in Boom

- A. Safety
  - 1. Store combustibles
  - 2. Wear safety clothing
  - 3. Have fire fighting equipment handy
- B. Preparation of Boom
  - 1. Cleaning joints
  - 2. Bevel metal
  - 3. Weld with small puddle
- C. Inspection of Weld

Section IV. Replacing Booms

A. Removing Booms

1. Remove old booms
2. Determine height for new booms

B. Replace Booms

1. Bolt booms to boom frame
2. Hook boom hinges
3. Hook boom chain
4. Attach boom to hinges
5. Level booms
6. Attach nozzle drops and/or nozzles

C. Replace Hoses

1. Inspect hoses for wear and ageing
2. Remove old hoses
3. Replace hoses
4. Reinstall strainers
5. Attach clamps
6. Clean up

Section V. Replace Liquid Hoses

A. Remove Hoses

1. Loosen clamps
2. Remove hose
3. Use old hose to measure new
4. Match new hose to job and chemical
    a. pressure rating
    b. most corrosive chemical

B. Replace Hoses

1. Position new hoses
2. Clamp and tighten
3. Check operation for leaks

Section VI. Replace Hose Clamps

Replace Clamps

1. Remove old clamps
2. Install new clamps
3. Tighten new clamps
4. Check operation for leaks

Section VII. Clean Clogged Screens

Cleaning Screens

1. Remove screens
2. Wash screens
    a. fuel oil
    b. detergent and toothbrush
    c. air gun
    d. toothpick
3. Replace screens

Section VIII. Replace Screens and Filters

A. Removing Screens and Filters

1. Remove and inspect screens and filters.
2. Select new screens
    a. mesh
    b. material resistant to chemicals

B. Replace Screens and Filters

Section IX. Change Nozzles on Applicators

Changing Nozzle

1. Remove defective nozzle
2. Selecting replacement nozzle
    a. spray pattern desired
    b. droplet size
    c. application rate
3. Selecting nozzle material
    a. brass
    b. aluminum
    c. stainless steel
    d. nylon
    e. hardened stainless steel
    f. chrome plated brass
    g. brass with tungsten carbide orifice
    h. ceramic
4. Install and align new nozzle

DATA SHEET B

CONTENT LIMITS

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

Section I. Inspection

A. Tightening Boom Clamps if Required

B. Inspecting U-bolts for Tightness and Wear - Replace if Excessively Worn

C. Inspecting Booms

  1. Welding cracks
  2. Repairing bends

D. Testing Boom Wing Supports

  1. Tightening support chains
  2. Repairing support chains
  3. Replacing support chains

E. Inspecting Transport Pins for Wear and Replacing if Needed.

F. Inspecting Lights and Wiring Operation

  1. Repair if possible
  2. Replace if required

G. Inspecting Nozzles

  1. Cleaning orifice
  2. Replacing nozzle if required

H. Inspecting Hoses

  1. Examining hoses for cracks or holes
  2. Running mock operation to test for pin holes
  3. Repairing or replacing as needed

I. Cleaning Equipment

PLANNING FORMAT

DRT 1.0, 2.1, 3.1, 4.1, 5.1, 6.1, 7.1, 8.1, 9.1, and 10.1

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

Subtasks: Inspection
Safety Cleaning

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. A liquid applicator needing inspection and maintenance
2. Needed service manuals for the applicator
3. An inspection checklist
4. Appropriate safety clothing and equipment
5. Appropriate tools and equipment.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Inspecting a liquid applicator and identifying all repairs and maintenance needed in a safe manner
2. Clean the applicator
3. Lubricate the moving parts.

EXAMINEE INSTRUCTION

DRT 1.0, 2.1, 3.1, 4.1, 5.1, 6.1, 7.1, 8.1, 9.1, and 10.1

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

For this test you will be required to perform the following:

1. Inspect a liquid applicator and identify all needed repairs and maintenance.
2. Observe appropriate safety measures.
3. Clean the applicator.
4. Lubricate the moving parts.

PERFORMANCE CHECKLIST

DRT 1.0, 2.1, 3.1, 4.1, 5.1, 6.1, 7.1, 8.1, 9.1, and 10.1

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Chose a safe place to clean applicator.
		2. Used appropriate safety clothing.
		3. Disposed of any chemical in the tank in a safe manner.
		4. Completed inspection checklist accurately identifying equipment defects.
		5. Thoroughly cleaned applicator.
		6. Lubricated all moving parts.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 3.2, 3.3, 4.2, 4.3, 4.4, 5.2, 5.3, 5.4, 6.2, 6.3, and 7.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

Subtasks: Straighten by Removing Clamps
Straighten by Torch
Safety
Preparation of Boom
Inspecting of Weld
Removing Booms
Replace Booms
Replace Hoses
Remove Hoses
Replace Hose Clamps

Content Limits

See Data Sheet A, Sections II, III, IV, V, and VI.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. A liquid applicator with booms needing repair or replacement
2. Needed replacement parts, booms, hoses, clamps, etc.
3. Arc or gas welder and supplies
4. Safety equipment
5. Needed tools
6. Butane torch
7. Service manual for the applicator.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Straightening bent booms
2. Replacing booms
3. Welding booms
4. Replacing hoses and clamps on liquid applicating equipment.

EXAMINEE INSTRUCTIONS

DRT 3.2, 3.3, 4.2, 4.3, 4.4, 5.2, 5.3, 5.4, 6.2, 6.3, and 7.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

For this test you will be required to perform the following:

1. Straighten a bent boom
2. Replace a boom
3. Replace hoses
4. Install hose clamps
5. Weld boom breaks.

PERFORMANCE CHECKLIST

DRT 3.2, 3.3, 4.2, 4.3, 4.4, 5.2, 5.3, 5.4, 6.2, 6.3, and 7.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Loosened clamps to see if bent boom would straighten when freed.
		2. Removed boom and used heat and the vise to straighten if necessary.
		3. Prepared boom for welding by beveling areas to be welded.
		4. Welded boom breaks with a small puddle.
		5. Inspected and tested welded boom by pressure.
		6. Properly leveled and installed straightened or new boom.
		7. Used old hoses to measure new hoses.
		8. Installed hoses and strainers properly.
		9. Installed new hose clamps so that the applicator did not leak.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 8.2, 9.2, 9.3, and 10.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

Content Limits

See Data Sheet A, Sections VII, VIII, and IX.

Test Stimulus Characteristics

The student will be provided the following data, materials, and supplies:

1. A liquid applicator with screens that need to be cleaned and nozzles to change
2. A data sheet showing chemicals to be used and asking for nozzle and screen selection to match
3. Solvent, a toothbrush, and toothpicks
4. A selection of nozzles
5. Replacement screens
6. Needed tools and equipment.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Inspecting screens and nozzles
2. Cleaning clogged screens
3. Selecting replacement screens and nozzles
4. Installing screens and nozzles
5. Test equipment for proper operation when completed.

EXAMINEE INSTRUCTIONS

DRT 8.2, 9.2, 9.3, and 10.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIQUID EQUIPMENT

For this test you will be required to perform the following:

1. Inspect nozzles for wear
2. Select nozzles type for a given application job
3. Select nozzle material for a given application chemical
4. Inspect and clean screens and filters
5. Select screens for a given application job
6. Install screens and nozzles.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 1: Clean Granular Application Equipment

PERFORMANCE OBJECTIVE

Given cleaning materials and a granular applicator, clean the applicator removing all chemicals and foreign materials and oiling all moving parts.

PERFORMANCE GUIDE

1. Check label of chemical applied for any specific instructions.
2. Wear appropriate safety clothing.
3. Select a safe place for cleaning and flushing.
4. Determine that hopper is empty.
5. Wash out hopper.
6. Oil all moving parts.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 2: Paint Applicating Equipment

PERFORMANCE OBJECTIVE

Given a well-ventilated paint room, gun, respirator, and compressed air source, paint the designated equipment. The completed paint job should be glossy, and with no curtains or sags exceeding 1/8 inch.

PERFORMANCE GUIDE

1. Determine that equipment to be painted is clean.
    a. remove any corrosion
    b. wash or spray away dirt
2. Move equipment to painting area.
3. Determine color and quality of paint to be used.
4. Determine if a primer coat is needed.
5. Determine if painting is to be done with a brush or spray gun.
6. Read instructions on how to apply paint. Prepare paint and painting equipment for application.
7. Apply finish coat.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 3: Grease Equipment

PERFORMANCE OBJECTIVE

Given a power or hand operated grease gun, grease rags, spare grease zerks, a fitting box end wrench and a service manual, lubricate all points specified in the owners manual. All lubrication points will have taken grease.

PERFORMANCE GUIDE

1. Find and read maintenance schedule for equipment and determine if grease maintenance is due.
2. Determine grease zerk locations.
   a. clean zerks before connecting grease gun
   b. pump grease into zerk
3. Determine location of bearings to be greased.
   a. determine that bearings are still in good condition and replace worn bearings
   b. apply proper amount of grease to each bearing
4. Update maintenance schedule.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 4: Inspect Broadcast Equipment for Damaged Parts

PERFORMANCE OBJECTIVE

Provided broadcast equipment, visually inspect the complete machine for corrosion, wear, defects, broken or missing components, rust, and cracks. All defects and problems identified by the instructor must be recognized and reported.

PERFORMANCE GUIDE

1. Check equipment for corrosion damage.
2. Identify worn parts.
3. Identify loose or worn bolts.
4. Locate any faulty electrical connections.
5. Check belts and chains for wear or adjustments.
6. Identify any bent broadcast wheels or fins.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 5: Inspect Dry Equipment for Damaged Parts

PERFORMANCE OBJECTIVE

Provided dry type equipment, visually inspect the complete machine for corrosion, wear, defects, broken or missing components, rust and cracks. All defects and problems identified by the instructor must be recognized and reported.

PERFORMANCE GUIDE

1. Identify any loose joints.
2. Check operation of all valves.
3. Check condition of all fittings.
4. Check paint for pits, rust or corrosion.
5. Check condition of all hoses.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 6: Replace Bearings on Spreading Fan

PERFORMANCE OBJECTIVE

Given a spreader fan with worn or defective bearings and replacement bearings, a bearing removal tool or wheel puller, emery cloth, oil, grease, bearing packer and a service manual, remove and replace the bearings on a spreading fan. When completed, the spreading fan will work freely without catching.

PERFORMANCE GUIDE

1. Remove old bearings.
2. Smooth the wheel shaft.
3. Grease the wheel shaft thoroughly.
4. Place on new bearings.
5. Determine that fans are placed back on properly to keep chemical from spreading too far left or right.

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DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 7: Replace Spreading Fan

PERFORMANCE OBJECTIVE

Given a replacement fan, allen wrench set, ¼ and ½" drive socket sets, wheel puller, emery cloth, oil can, ball pein hammer, drift pin punches, and a service manual, remove and replace the spreading fan. Upon completion, the spreading fan will be in place and operate according to manufacturer's specifications so it operates freely and provides a uniform pattern.

PERFORMANCE GUIDE

1. Loosen top set screw on spreading fan motor.
2. Loosen bolts on bearing.
3. Tap fan down off motor shaft.
4. Smooth shaft.
5. Tap replacement fan back onto shaft.
6. Tighten bolts on bearing.
7. Tighten top set screw on motor.
8. Operate to check operation and spreading pattern provided.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 8: Install Spreader Fan on Shaft

PERFORMANCE OBJECTIVE

Given a spreader fan, service manual, wheelpuller, ball pein hammer, emery cloth, drift pin punches, penetrating oil, a set of allen wrenches, a set of 3/8 drive sockets and a butane torch, remove and replace a spreader fan on shaft. Upon completion, the spreader fan will operate smoothly and without catching.

PERFORMANCE GUIDE

1. Remove old fan.
2. Slide fan up on shaft.
3. Install hub.
4. Tighten fan.
5. Install bearing.
6. Bolt to frame.

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DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 9: Replace Links in Worn Chains

PERFORMANCE OBJECTIVE

Given replacement links, a chain tool, ½" drive socket set, an open box end wrench set, screwdriver, ball pein hammer, combination pliers, cotter key, and service manual, replace links in worn chains on assigned equipment so the chain functions freely.

PERFORMANCE GUIDE

1. Identify the worn links in the chain.
2. Remove cotter key from worn link.
3. Remove pin from chain link.
4. Remove worn link.
5. Insert new chain link.
6. Insert pin to connect link and chain.
7. Insert cotter key in end of pin.
8. Inspect chain after link has been replaced.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 10: Replace Worn Chains

PERFORMANCE OBJECTIVE

Given a piece of equipment with worn chains, replacement chains, chain tool, oil, combination pliers, cotter keys, screwdriver, a box open end wrench set, and a service manual, remove and replace the old chain. Upon completion, the new chain will operate smoothly and without catching.

PERFORMANCE GUIDE

1. Remove cotter key off one of the old chain links.
2. Remove pin from chain link.
3. Remove chain.
4. Place on new chain.
5. Insert new pin to fasten chain together.
6. Insert cotter key in end of pin.
7. Test new chain for proper operation.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 11: Replace Drag Chain in Spreader

PERFORMANCE OBJECTIVE

Given a spreader, replacement drag chain, a chain tool, ball pein hammer, bolt cutter, wrecking bars, a come along, and a service manual, remove and replace the drag chain on a spreader in accordance with the manufacturer's specifications and procedures. The drag chain will work freely.

PERFORMANCE GUIDE:

1. Disassemble or cut off old chain. Pull old chain out of hopper.
2. Put new chain in spreader.
   a. align properly
   b. assemble together making sure it is properly on the bearings
3. Check the chain system for operation without binding.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 12: Install Wheel Drive on Applicating Equipment

PERFORMANCE OBJECTIVE

Given a wheel drive spreader, applicating equipment, a ½" drive socket set, oil can, ball pein hammer, drift pin punch set, pocket rule, and a service manual, install wheel drive on application equipment. Upon completion, the wheel drive will function smoothly.

PERFORMANCE GUIDE

1. Hook bolts on pillow block bearings to the wheel drive.
2. Determine that spring leaf is attached to the truck. Attach spring leaf if needed.
3. Attach cylinder to spring leaf.
4. Attach drive chain.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 13: Replace Belts on Spreaders

PERFORMANCE OBJECTIVE

Given a spreader, a set of open box end wrenches, a pry bar, replacement belts, and service manual, remove and replace the belts on a spreader in accordance with the manufactuere's specifications and procedures. The belts on the spreader will operate freely.

PERFORMANCE GUIDE

1. Loosen idler on belt.
2. Slip loose belt over one of the pulley wheels.
3. Remove belts from spreader.
4. Place new belts on spreader.
5. Tighten up and secure the belt idler.
6. Test belts for proper operation.

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DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 14: Change Tires on Spreader

PERFORMANCE OBJECTIVE

Given a spreader with flat or defective tires, a jack, and lug wrench, replace the old mounted tire with a new one. Upon completion, the new tire will be securely fastened to the spreader.

PERFORMANCE GUIDE

1. Raise spreader from floor and support it following accepted safety practices.
2. Remove lug nuts.
3. Remove old mounted tire from spreader.
4. Place new mounted tire on spreader.
5. Put lug nuts back on.
6. Tighten lug nuts.
7. Lower spreader back to the floor.

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 1: Clean Granular Application Equipment.

II. Task Performance Cue(s): Employer asks you to clean granular application equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Wear safety clothing and equipment.			2	
2. Check label for any specific instructions.			3	
3. Select safe place for cleaning and flushing.			4	
4. Is hopper empty?	6	5		
5. Place contents in original container.			6	
6. Wash hopper.			7	
7. Oil all moving parts.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 2: Painting Equipment.

II. Task Performance Cue(s): Employer asks you to paint equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Inspect equipment to be painted.			2	
2. Does equipment need to be steamed or washed?	4	3		
3. Does equipment need rust and corrosion removed?	4	5		
4. Secure equipment and clean surface to be painted.			5	
5. Mask if needed and move to painting area.			6	
6. Determine type, color, and quality of paint to be used.			7	
7. Will spray gun be used?	9	8		
8. Will brush be used?	10	EOT		
9. Is primer needed?	10	11		
10. Get equipment and prime.			12	
11. Get equipment.			12	
12. Read instructions; prepare paint and painting equipment for application.			13	
13. Apply finish coat according to instructions.			14	
14. Remove masking tape.			15	
15. Replace decals and reassemble equipment.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 3: Grease Equipment.

II. Task Performance Cue(s): Employer asks you to grease equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Find maintenance schedule for vehicle.			2	
2. Read maintenance schedule.			3	
3. Is the maintenance due?	4	16		
4. Collect grease gun, rags, extra grease.			5	
5. Get a diagram of grease zerk locations, unless you know.			6	
6. Are all bearings due to be greased?	8	7		
7. Find those bearings which need to be greased.			8	
8. Clean zerks before connecting grease gun.			9	
9. Does zerk take grease?	10	14		
10. Apply the proper amount of grease to each bearing.			11	
11. Are all bearings still in good working condition?	12	18		
12. Record maintenance on record.			13	
13. Put all tools away and return maintenance schedule.			EOT	
14. Remove zerk and clean zerk and entrance to bearing.			15	
15. Replace zerk.			10	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
16. Spot check bearings and see that they are in good condition.				
17. Are all in good working condition?	13	18		
18. Replace or repair bad bearings.			12	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 4: Inspect Broadcast Equipment for Damaged Parts.

II. Task Performance Cue(s): Employer asks you to inspect broadcast equipment for damaged parts.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is there any corrosion on the metal parts?	2	3		
2. Remove corrosion with a wire brush, sandpaper or file and paint with primer and a finish coat.			3	
3. Are there any worn parts?	4	5		
4. Replace worn parts and lubricate replacements.			5	
5. Are any bolts loose or in need of replacement?	6	7		
6. Tighten or remove old bolts and replace with new bolts.			7	
7. Repair any faulty electrical connections.			8	
8. Are all belts and chains in their proper condition and tension?	10	9		
9. Replace or adjust belts and chains.			10	
10. Are spinning broadcast wheels and fins straight?	EOT	11		
11. Straighten or replace broadcast spinning wheels and fins.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 5: Inspect Dry Equipment for Damaged Parts.

II. Task Performance Cue(s): Employer asks you to inspect dry equipment for damaged parts.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Check all joints and make sure they are tight.			2	
2. Check all valves and make sure they are working.			3	
3. Check that all fittings are in good shape.			4	
4. Repair or replace weak hoses or other parts that do not work or are weakened due to corrosion or damage. Use replacement hoses that are recommended for the material to be handled.			5	
5. Make sure equipment has a good coat of paint to help prevent rust and corrosion that can clog valves.			6	
6. Keep equipment cleaned and remove any foreign debris.			EOT	

TASK ANALYSIS

DOMAIN: **INSPECTION AND MAINTENANCE OF DRY EQUIPMENT**

I. Task 6: Replace Bearing on Spreader Fan.

II. Task Performance Cue(s): Employer asks you to replace bearings on spreader fan.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Are bearings worn in and in need of replacement?	2	EOT		
2. Take oxy-acetylene torch and cut off old bearing.			3	
3. Take emery cloth and smooth the wheel shaft.			4	
4. Grease the wheel shaft thoroughly.			5	
5. Place on new bearing.			6	
6. Be sure fans are placed back on properly to keep chemical from spreading too far left or right.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 7: Replace Spreading Fan.

II. Task Performance Cue(s): Asked by employer to replace spreading fan.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does spreading fan need replacing?	2	EOT		
2. Loosen top set screw on spreading fan motor.			3	
3. Loosen bolts on bearing.			4	
4. Tap old fan down off of motor shaft.			5	
5. Use emery cloth to smooth shaft.			6	
6. Pound new fan back onto shaft.			7	
7. Tighten bolts on bearing.			8	
8. Tighten top set screw on motor.			9	
9. Check operation and spreading pattern.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT.

I. Task 8: Install Spreader Fan on Shaft.

II. Task Performance Cue(s): Asked by employer to install spreader fan on shaft.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does spreader fan need to be installed on shaft?	2	EOT		
2. Slide fan up on shaft.			3	
3. Install hub on the shaft.			4	
4. Tighten the fan to the shaft.			5	
5. Install bearing on shaft.			6	
6. Bolt spreader fan assembly to vehicle frame.			7	
7. Check fan operation and spreading pattern.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT.

I. Task 9: Replace Links in Worn Chain.

II. Task Performance Cue(s): Employer asks you to replace links in worn chain.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Identify worn link in chain.			2	
2. Is the wear apparent from normal use?	3	10		
3. Remove cotter key from worn link.			4	
4. Remove pin from chain link.			5	
5. Remove worn link.			6	
6. Insert new chain link.			7	
7. Insert pin to connect link and chain.			8	
8. Insert cotter key in end of pin.			9	
9. Inspect chain after link is replaced.			EOT	
10. Determine what would cause abnormal wearing and solve the problem.			3	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 10: Replace Worn Chain.

II. Task Performance Cue(s): Employer asks you to replace worn chains.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Identify wear of chain.			2	
2. Remove cotter key of one of the chain links.			3	
3. Remove pin from chain link.			4	
4. Remove chain.			5	
5. Place on new chain.			6	
6. Insert new pin to fasten chain together.			7	
7. Insert cotter key in end of pin.			8	
8. Test new chain for operation.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 11: Replace Drag Chain in Spreader.

II. Task Performance Cue(s): Employer asks you to replace drag chain in spreader.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Disassemble or cut off old chain.			2	
2. Pull old chain out of hopper.			3	
3. Align and put in new chain.			4	
4. Assemble together making sure it is properly on the bearings.			5	
5. Check chain system.			EOT	

TASK ANALYSIS

DOMAIN: **INSPECTION AND MAINTENANCE OF DRY EQUIPMENT**

I. Task 12: **Install Wheel Drive on Applicating Equipment.**

II. Task Performance Cue(s): **Employer has asked you to install wheel drive applicating equipment.**

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does wheel drive need to be installed on applicating equipment?	2	EOT		
2. Hook bolts on the pillow block bearings to the wheel drive.			3	
3. Does spring leaf need to be attached?	4	5		
4. Attach spring leaf.			5	
5. Attach cylinder from wheel drive to spring leaf.			EOT	

TASK ANALYSIS

DOMAIN: **INSPECTION AND MAINTENANCE OF DRY EQUIPMENT**

I. Task 13: Replace Belts on Spreader.

II. Task Performance Cue(s): Employer asks you to replace the belts on a spreader.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine which belt to replace.			2	
2. Loosen idler on belt.			3	
3. Slip loose belt over one of the pulley wheels.			4	
4. Remove belt from spreader.			5	
5. Place new belt on spreader.			6	
6. Tighten up and secure the belt idler.			7	
7. Test belt for operations.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

I. Task 14: Change Tires on Spreader.

II. Task Performance Cue(s): Supervisor asks you to change tires on spreader.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Raise spreader from floor and support following accepted safety practices.			2	
2. Remove lug nuts.			3	
3. Remove wheel from spreader.			4	
4. Place new wheel on spreader.			5	
5. Put lug nuts back on.			6	
6. Tighten lug nuts.			7	
7. Lower wheel to the floor.			EOT	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 1: Clean Granular Application Equipment

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Clean Granular Application Equipment Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Clean Granualr Application Equipment Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 1: Clean Granular Application Equipment (Continued)

5. Rules for inspecting equipment for lubrication, 6. Rules for inspecting the equipment for cleaning,			
	ST #3 Safety Learning Content: Rules for safety procedures,		ST #3 Safety Learning Content: 1. Interpret label. 2. Select and wear safety equipment. 3. Select proper site for cleaning equipment.
	ST #4 Cleaning Learning Content: Rules for cleaning,		ST #4 Cleaning Learning Content: 1. Empty hopper. 2. Dispose of or store chemical. 3. Lubricate parts according to operators manual. 4. Clean up.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 2: Painting Equipment

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Painting Equipment Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Painting Equipment Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 2: Painting Equipment (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning,	ST #3 Painting Equipment Learning Content: 1. Rules for determining equipment needed. 2. Rules for painting, 3. Rules for clean up,		ST #3 Painting Equipment Learning Content: 1. Obtain materials. 2. Determine color and amount of paint. 3. Select mask. 4. Prepare paint. 5. Clean surface. 6. Apply paint and primer. 7. Clean materials used. 8. Replace all equipment used. 9. Apply decals. 10. Reassemble equipment.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 3: Grease Equipment

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Grease Equipment Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Grease Equipment Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts, 2. Rules for inspecting bolts, 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring, 2. Rules for inspecting belts and chains for wear and tension, 3. Rules for inspecting spinning wheels and spreader fans 4. Rules for inspecting tires on spreader		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 3: Grease Equipment (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Determine Lubrication Needs Learning Content: 1. Rules for determining if maintenance is due. 2. Rules for obtaining necessary equipment. 3. Rules for locating grease zerks.		ST #3 Determine Lubrication Needs Learning Content: 1. Obtain maintenance materials and records. 2. Interpret operators manual. 3. Lubricate as required by operators manual.
	ST #4 Applying Grease Learning Content: 1. Rules for applying grease. 2. Rules for inspecting bearings. 3. Rules for clean up.		ST #4 Applying Grease Learning Content: 1. Clean zerks before applying grease. 2. Remove and clean zerk if needed. 3. Replace zerk if needed. 4. Apply proper amount of grease to each bearing. 5. Inspect bearings. 6. Replace defective bearings. 7. Record maintenance performed on maintenance schedule. 8. Clean area and replace equipment.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 4: Inspect Broadcast Equipment for Damaged Parts

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Inspect Broadcast Equipment for Damaged Parts Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Inspect Broadcast Equipment for Damaged Parts Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 4: Inspect Broadcast Equipment for Damaged Parts (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 5: Inspect Dry Equipment for Damaged Parts

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Inspect Dry Equipment for Damaged Parts Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Inspect Dry Equipment for Damaged Parts Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts, 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 5: Inspect Dry Equipment for Damaged Parts (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Inspect Hoses, Joints, and Valves Learning Content: 1. Rules for inspecting joints. 2. Rules for inspecting valves. 3. Rules for inspecting hoses.		ST #3 Inspect Hoses, Joints, and Valves Learning Content: 1. Inspect joints for tightness and repair as needed. 2. Inspect all valves for proper operation and repair or replace as needed. 3. Inspect hoses and repair or replace if needed. 4. Determine chemicals to be used and match material and chemical.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 6: Replace Bearings on Spreader Fan

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Replace Bearings on Spreader Fan Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Replace Bearings on Spreader Fan Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 6: Replace Bearings on Spreader Fan (Continued)

5. Rules for inspecting equipmant for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Removing Bearing Learning Content: Rules for removing worn bearings.		ST #3 Removing Bearing Learning Content: 1. Operate oxy-acetylene torch, 2. Remove bearing.
	ST #4 Replacing Bearings Learning Content: Rules for replacing new bearings.		ST #4 Replacing Bearings Learning Content: 1. Smooth shaft. 2. Lubricate shaft. 3. Replace bearings. 4. Reinstall and adjust fans. 5. Replace all equipment used.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 7: Replace Spreading Fan

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Replace Spreading Fan Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Replace Spreading Fan Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts, 2. Rules for inspecting bolts, 3. Rules for inspecting fittings,		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring, 2. Rules for inspecting belts and chains for wear and tension, 3. Rules for inspecting spinning wheels and spreader fans, 4. Rules for inspecting tires on spreader,		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring, 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 7: Replace Spreading Fan (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Fan Replacement Learning Content: Rules for replacing spreading fan.		ST #3 Fan Replacement Learning Content: 1. Remove old fan. 2. Replace new fan. 3. Operate to test. 4. Adjust to desired spreading pattern. 5. Replace all equipment used.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 8: Install Spreader Fan on Shaft

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Install Spreader Fan on Shaft Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Install Spreader Fan on Shaft Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 8: Install Spreader Fan on Shaft (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Installation of Fan Learning Content: Rules for replacing fan.		ST #3 Installation of Fan Learning Content: 1. Remove spreader fan 2. Install bearing and fan. 3. Check operation. 4. Put equipment away

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 9: Replace Links in Worn Chain

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Replace Links in Worn Chain Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Replace Links in Worn Chain Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 9: Replace Links in Worn Chain (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning,			
	ST #3 Link Replacement Learning Content: Rules for replacing worn links,		ST #3 Link Replacement Learning Content: 1. Remove worn links. 2. Replace new link. 3. Adjust tension. 4. Test operation. 5. Replace all equipment used.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 10: Replace Worn Chain

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Replace Worn Chain Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Replace Worn Chain Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 10: Replace Worn Chain (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning,			
	ST #3 Chain Replacement Learning Content: Rules for replacing worn chain.		ST #3 Chain Replacement Learning Content: 1. Remove chain. 2. Assemble new chain links together. 3. Install new chain. 4. Check tension. 5. Lubricate as needed. 6. Test operation. 7. Replace all equipment used.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 11: Replace Drag Chain in Spreader

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Replace Drag Chain in Spreader Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Replace Drag Chain in Spreader Tasks
ST #1		ST #1	
Inspecting Parts		Inspecting Parts	
Learning Content:		Learning Content:	
1. Rules for inspecting parts,		1. Inspect for corrosion.	
2. Rules for inspecting bolts,		2. Replace worn parts.	
3. Rules for inspecting fittings,		3. Remove corrosion.	
		4. Lubricate replacements.	
		5. Paint as needed.	
		6. Inspect bolts.	
		7. Tighten as needed.	
		8. Replace bolts when needed.	
		9. Inspect fittings.	
ST #2		ST #2	
Inspection of Equipment		Inspection of Equipment	
Learning Content:		Learning Content:	
1. Rules for inspecting electrical wiring,		1. Inspect electrical wiring.	
2. Rules for inspecting belts and chains for wear and tension,		2. Inspect belts and chains.	
3. Rules for inspecting spinning wheels and spreader fans,		3. Adjust or replace as needed.	
4. Rules for inspecting tires on spreader.		4. Inspect spinning wheels and spreader fans.	
		5. Inspect tires.	
		6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 11: Replace Drag Chain in Spreader (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Drag Chain Replacement Learning Content: Rules for replacing drag chain.		ST #3 Drag Chain Replacement Learning Content: 1. Remove old chain. 2. Align and adjust chain. 3. Operate to test operation and alignment. 4. Replace all equipment used.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 12: Install Wheel Drive on Applicating Equipment

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Install Wheel Drive on Applicating Equipment Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Install Wheel Drive on Applicating Equipment Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 12: Install Wheel Drive on Applicating Equipment (Continued)

5. Rules for inspecting equipment for lubrication, 6. Rules for inspecting the equipment for cleaning,	ST #3 Installation of Wheel Drive Learning Content: Rules for replacing wheel drive.		ST #3 Installation of Wheel Drive Learning Content: 1. Assemble wheel drive mechanism to wheel. 2. Adjust parts. 3. Check operation. 4. Put equipment away.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 13: Replace Belts on Spreader

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Replace Belts on Spreader Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Replace Belts on Spreader Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings,		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 13: Replace Belts on Spreader (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.	ST #3 Belt Replacement Learning Content: Rules for replacing belts.		ST #3 Belt Replacement Learning Content: 1. Replace belt. 2. Adjust tension. 3. Test for proper operation. 4. Replace all equipment used.

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 14: Change Tires on Spreader

Generalizable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Generalizable to all Change Tires on Spreader Tasks	Transferrable to all Tasks in the Inspection and Maintenance of Dry Equipment Domain	Transferrable to all Change Tires on Spreader Tasks
ST #1 Inspecting Parts Learning Content: 1. Rules for inspecting parts. 2. Rules for inspecting bolts. 3. Rules for inspecting fittings.		ST #1 Inspecting Parts Learning Content: 1. Inspect for corrosion. 2. Replace worn parts. 3. Remove corrosion. 4. Lubricate replacements. 5. Paint as needed. 6. Inspect bolts. 7. Tighten as needed. 8. Replace bolts when needed. 9. Inspect fittings.	
ST #2 Inspection of Equipment Learning Content: 1. Rules for inspecting electrical wiring. 2. Rules for inspecting belts and chains for wear and tension. 3. Rules for inspecting spinning wheels and spreader fans. 4. Rules for inspecting tires on spreader.		ST #2 Inspection of Equipment Learning Content: 1. Inspect electrical wiring. 2. Inspect belts and chains. 3. Adjust or replace as needed. 4. Inspect spinning wheels and spreader fans. 5. Inspect tires. 6. Clean equipment.	

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

TASK 14: Change Tires on Spreader (Continued)

5. Rules for inspecting equipment for lubrication. 6. Rules for inspecting the equipment for cleaning.			
	ST #3 Remove Tire Learning Content: 1. Rules for raising spreader from floor and supporting. 2. Rules for removing tire.		ST #3 Remove Tire Learning Content: 1. Loosen lug nuts. 2. Jack up spreader. 3. Remove tire.
	ST #4 Replace Tire Learning Content: 1. Rules for replacing tire. 2. Rules for lowering spreader.		ST #4 Replace Tire Learning Content: 1. Replace tire. 2. Tighten lug nuts. 3. Lower spreader. 4. Replace tools. 5. Clean up.

DATA SHEET A

CONTENT LIMITS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Section I. Clean Granular Application Equipment

A. Safety

1. Proper clothing
2. Follow label precautions
3. Select safe place for cleaning

B. Cleaning

1. Empty hopper
2. Dispose of contents
3. Wash hopper
4. Oil moving parts

Section II. Painting Equipment

A. Determining Equipment Needed

1. Cleaning
    a. steam
    b. wash
    c. sanding

2. Masking
    a. tape
    b. grease or oil

3. Method
    a. spray
    b. brush

4. Coats
    a. prime
    b. finish

5. Paint
    a. acrylic
    b. oil
    c. latex

6. Colors as desired

B. Painting

1. Primer or undercoating
2. Mixing paint
3. Prepare painting equipment
4. Applying paint

C. Clean Up

1. Clean equipment
2. Store paint
3. Remove masking
4. Clean area

Section III. Grease Equipment

A. Determine Lubrication Needs

1. Check maintenance schedule
    a. owners manual
    b. company policy

2. Obtaining equipment
    a. power grease gun
    b. hand grease gun
    c. oil can
    d. grease rags

3. Identifying grease fittings
    a. owners manual
    b. lubrication charts
    c. visual inspection

B. Applying Grease

1. Clean zerks
2. Pump grease into zerks as required
3. Remove zerk and clean or replace until fitting accepts grease
4. Inspect bearings
    a. repair if damaged
    b. replace if necessary
5. Update maintenance schedule
6. Clean up
    a. tools
    b. replace tools and equipment
    c. clean area

Section IV. Inspect Dry Equipment for Damaged Parts

A. Inspect Hoses, Joints and Valves

1. Inspect joints for tightness
2. Inspect valves for proper operation
3. Inspect hoses
    a. repair hoses needing repair
    b. replace hoses needing replacement
    c. select hoses recommended for chemicals to to be applied

Section V. Replace Bearings on Spreader Fan

A. Removing Bearings

1. Removing worn bearings
    a. oxy-acetylene
    b. hydraulic press
    c. pullers
    d. handdrivers

B. Replacing Bearings

1. Smooth shaft
2. Lubricate shaft
3. Install new bearings
    a. press
    b. drivers
4. Reinstall spreader fans
5. Check operation and pattern

Section VI. Replace Spreading Fan

A. Fan Replacement

1. Loosen set screw on fan motor
2. Loosen bolts on bearing
3. Tap fan down off shaft
4. Smooth shaft with emery cloth
5. Tap replacement fan back onto shaft
6. Tighten bolts on bearing
7. Tighten set screw on fan motor

Section VII. Installing Spreader Fan on Shaft

A. Installation of Fan

1. Remove old fan
2. Slide fan onto shaft
3. Install hub on shaft
4. Tighten fan to shaft
5. Install bearing on shaft
6. Bolt spreader fan assembly to vehicle frame

Section VIII. Replace Links in Worn Chain

A. Link Replacement

1. Remove cotter key from link
2. Remove pin from chain link
3. Remove link
4. Insert new link
5. Insert pin to connect link and chain
6. Insert cotter pin
7. Test operation

Section IX. Replace Worn Chain

A. Chain Replacement

1. Remove cotter pin from link
2. Remove pin from link
3. Remove chain
4. Install new chain
5. Insert new pin to join chain
6. Install new cotter pin in link
7. Test operation of new chain

Section X. Replace Drag Chain in Spreader

A. Drag Chain Replacement

1. Dissassemble or cut off old chain
2. Remove old chain
3. Install and align new chain
4. Join together new drag chain
5. Check operation of new drag chain

Section XI. Install Wheel Drive on Applicating Equipment

A. Installation of Wheel Drive

1. Install pillow blocks to wheel drive
2. Attach spring leaf if needed
3. Attach cylinder from wheel drive to spring leaf

Section XII. Replace Belts on Spreader

A. Belt Replacement

1. Loosen belt idler
2. Slip loose belt over one of the pulley wheels
3. Remove belt from spreader
4. Place new belt on spreader
5. Adjust and tighten idler
6. Check operation

Section XIII Change Tires on Spreader

A. Remove Tire

1. Raise spreader
2. Remove tire

B. Replace Tire

1. Install tire
2. Lower spreader

DATA SHEET B

CONTENT LIMITS

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Section I. Inspecting Parts

A. Inspecting Parts

1. Identifying corrosion on metal parts
2. Removing corrosion
   a. wire brush
   b. sandpaper
   c. file
3. Painting parts
   a. primer
   b. finish coat
4. Replacing worn parts
5. Lubricating
   a. periodic maintenance
   b. after washing

B. Inspecting Bolts

1. Tightening loose bolts
2. Replacing defective bolts

C. Inspecting Fittings for Loose Connections

Section II. Inspection of Equipment

A. Inspecting Electrical Wiring

1. Repairing minor damages to wiring
2. Rewiring electrical system

B. Inspecting Belts and Chains

1. Adjusting idlers
2. Replacing worn drive mechanism
3. Replacing worn links in chain

C. Inspecting Spinning Wheels and Spreader Fans

1. Determining if spinning wheels or fans are straight
2. Repairing defects

D. Inspecting Tires

1. Tread wear
2. Cracks and breaks
3. Air pressure

E. Inspecting for Lubrication

1. Periodic maintenance lubrication
2. Lubrication after washing or painting
3. Replacing bad zerks
4. Recording in maintenance records

F. Inspecting Equipment for Cleaning

Remove debris and foreign matter

PLANNING FORMAT

DRT 1.0, 2.1, 2.2, 3.0, 4.0, 5.1, 5.2, 6.1, 6.2, 7.1, 7.2, 8.1, 8.2, 9.1, 9.2, 10.1, 10.2, 11.1, 11.2, 12.1, 12.2, 13.1, 13.2, 14.1, and 14.2

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtasks: Inspecting Parts
Inspection of Equipment
Cleaning
Lubrication
Safety

Content Limits

See Data Sheet A, Sections I and III.
See Data Sheet B, Sections I and II

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Dry applicator
2. Power washer
3. Necessary tools and equipment
4. Safety clothing and equipment
5. Grease gun
6. Inspection checklist.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Safely cleaning the dry applicator
2. Inspecting the applicator and listing all possible and definite defects
3. Lubricating all moving parts
4. Recording lubrication done on the maintenance schedule.

EXAMINEE INSTRUCTIONS

DRT 1.0, 2.1, 2.2, 3.0, 4.0, 5.1, 5.2, 6.1, 6.2, 7.1, 7.2, 8.1, 8.2, 9.1, 9.2, 10.1, 10.2, 11.1, 11.2, 12.1, 12.2, 13.1, 13.2, 14.1, and 14.2

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to perform the following:

1. Using all safety precautions before and during the cleaning procedure.
2. Thoroughly inspect the dry applicator for defective parts.
3. Prepare a maintenance sheet for items that need repair or replacement.
4. Preparing grease zerks for lubrication process.
5. Lubricating the dry applicator.

PERFORMANCE CHECKLIST

DRT 1.0, 2.1, 2.2, 3.0, 4.0, 5.1, 5.2, 6.1, 6.2, 7.1, 7.2, 8.1, 8.2, 9.1, 9.2, 10.1, 10.2, 11.1, 11.2, 12.1, 12.2, 13.1, 13.2, 14.1, and 14.2

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

A*	U		EVALUATIVE STATEMENT AND CRITERIA
		1.	Followed all safety practices before and during washing process.
		2.	Selected a safe place to flush hopper out.
		3.	Wore appropriate safety clothing for job.
		4.	Oiled or greased all moving parts.
		5.	Greased all fittings.
		6.	Updated maintenance schedule or records.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 2.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtask: Painting Equipment

Content Limits

See Data Sheet A, Section II.

Test Stimulus Characteristics

The student will be provided the following data, materials and supplies:

1. Dry applicator
2. Spray paint equipment
3. Necessary tools for job
4. Paint and primer
5. Safety equipment and instructions
6. Replacement decals if needed.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Preparing equipment to be painted
2. Using all safety precautions before and during painting
3. Painting the equipment
4. Applying decals if required
5. Storing extra paint
6. Clean paint equipment.

EXAMINEE INSTRUCTIONS

DRT 2.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to perform the following:

1. Prepare equipment for painting
2. Use all safety equipment and precautions
3. Properly paint the dry applicator
4. Apply decals if needed
5. Clean area and store excess paint
6. Clean paint equipment.

PERFORMANCE CHECKLIST

DRT 2.3
DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Properly cleaned equipment to be painted.
		2. Selected and applied applied appropriate undercoat.
		3. Prepared equipment for finish coat.
		4. Applied uniform coat of paint.
		5. Cleaned paint equipment.
		6. Stored materials.
		7. Cleaned area.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 5.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtasks: Inspect Hoses, Joints, and Valves

Content Limits

See Data Sheet A, Section IV.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Necessary tools and equipment
2. Replacement parts as needed
3. A list of chemicals to be applied
4. Service manual for the dry applicator
5. A dry chemical applicator requiring maintenance.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Inspecting, tightening, and repairing joints
2. Inspecting, repairing or replacing hoses on dry equipment
3. Inspecting, repairing or replacing valves on dry equipment
4. Selecting appropriate hoses for the chemicals to be applied in dry equipment.

EXAMINEE INSTRUCTIONS

DRT 5.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to perform the following:

1. Inspect, tighten, repair or replace joints on dry equipment
2. Inspect, repair, or replace hoses on dry equipment
3. Select suitable hose material relative to chemicals to be applied
4. Inspect, repair, or replace valves on dry equipment.

PLANNING FORMAT

DRT 6.3, 6.4, 7.3, and 8.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtasks: Removing Bearings
Replacing Bearings
Replacing Spreading Fan
Installation of Fan

Content Limits

See Data Sheet A, Sections V, VI, and VII.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. A dry applicator in need of maintenance
2. Necessary tools and equipment for the task
3. Replacement parts needed
4. Service manual for the dry applicator being used.

Test Response Characteristics

The student will dmonstrate an understanding of the concepts, principles, and practices involved in:

1. Testing bearing tolerances
2. Replacing bearing if required
3. Replacing the spreader fan if needed
4. Installing spreader fan on shaft
5. Testing for proper operation.

EXAMINEE INSTRUCTIONS

DRT 6.3, 6.4, 7.3, and 8.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to perform the following:

1. Inspect bearing tolerances on spreader fan
2. Replacing all worn bearings
3. Replacing spreader fan if required
4. Checking spreader shaft for excessive wear or damage
5. Testing equipment for proper operation.

PLANNING FORMAT

DRT 9.3, 10.3, and 11.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtasks: Link Replacement
Chain Replacement
Drag Chain Replacement

Content Limits

See Data Sheet A, Sections VIII, IX, and X.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Service manual for equipment being used
2. Dry applicator need chain repair
3. Necessary tools and equipment
4. Replacement parts if needed.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Inspecting chain for wear
2. Replacing individual links where possible
3. Replacing chain sections where possible
4. Replacing entire drag chain if required
5. Adjusting chain tension
6. Testing equipment for proper operation.

EXAMINEE INSTRUCTIONS

DRT 9.3, 10.3, and 11.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to perform the following:

1. Inspect entire chain for excessive wear
2. Replace individual links if needed
3. Replace sections of chain if required
4. Replace entire drag chain when partial repairs are not feasible
5. Adjust chain on equipment and test for proper operation.

PLANNING FORMAT

DRT 12.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtask: Installing Wheel Drive

Content Limits

See Data Sheet A, Section XI

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Dry applicator
2. Necessary tools and equipment
3. Instructional pamphlet for installing wheel drive
4. Service manual
5. Wheel drive kit.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Attaching wheel drive mechanism to equipment
2. Adjusting and testing wheel drive for proper operation.

EXAMINEE INSTRUCTIONS

DRT 12.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to perform the following:

1. Attach wheel drive mechanism
2. Adjust and test for proper operation.

PLANNING FORMAT

DRT 13.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtask: Replacing Belts on Spreader

Content Limits

See Data Sheet A, Section XII

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Belt driven dry applicating equipment with defective belts
2. Service manual for the applicator
3. Replacement belts
4. Necessary tools.

Test Response Characteristics

The student will be expected to demonstrate an understanding of the concepts, principles, and practices involved in:

1. Replacing belts on dry applicating equipment.

EXAMINEE INSTRUCTIONS

DRT 13.3

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to:

Replace the belts on a dry applicator.

PLANNING FORMAT

DRT 14.3 and 14.4

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

Subtasks: Remove Tire
Replace Tire

Content Limits

See Data Sheet A, Section XIII

Test Stimulus Characteristics

The student will be supplied the following data, material, and supplies:

1. A dry applicator with a defective tire
2. Necessary equipment and tools to do the task
3. A replacement wheel and tire.

Test Response Characteristics

The student will be expected to demonstrate an understanding of the concepts, principles, and practices involved in:

Changing a defective tire on a dry applicator.

EXAMINEE INSTRUCTIONS

DRT 14.3 and 14.4

DOMAIN: INSPECTION AND MAINTENANCE OF DRY EQUIPMENT

For this test you will be required to :

Change a tire on a dry applicator.

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

TASK 1: Assemble Applicating Pumps

PERFORMANCE OBJECTIVE

Following the manufacturer's recommended procedures and using the proper tools, equipment and service manual, assemble an applicating pump on chemical equipment vehicles. The adjustment will be within manufacturer's limits.

PERFORMANCE GUIDE:

1. Install bolts to the plate and pump bracket.
2. Install drive chain to wheel drive.
3. Set idler sprocket for proper chain tightness.

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

TASK 2: Assemble Boom Type Chemical Equipment

PERFORMANCE OBJECTIVE:

Given boom type chemical applicating equipment, ½" drive socket set, a box-open end wrench set, screwdrivers, pipe wrenches, a service manual, and following the manufacturer's procedures and specifications, assemble the boom type chemical equipment for use.

PERFORMANCE GUIDE:

1. Attach boom into 3 segments so that outer 2 segments can fold to corresponding sides.
2. Attach nozzle attachments on booms.
    a. attach T-shaped nozzle bodies in the middle of the section on 1" tubing
    b. attach end nozzles to the end of the booms with 1" tubing
3. Attach 3 hoses to the outlet tank. Attach 1 hose to each different segment of the 3 boom segments.
4. Attach drop nozzles to the boom spraying attachments if required for the job.

TASK ANALYSIS

DOMAIN: ASSEMBLE BOOM-TYPE EQUIPMENT

I. Task 1: Assemble Applicating Pump.

II. Task Performance Cue(s): Employer asks you to assemble applicator pump.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does applicating pump need to be assembled on equipment?	2	EOT		
2. Install bolts to the plate and pump bracket.			3	
3. Is pump to be installed chain driven?	4	6		
4. Install drive chain to wheel drive.			5	
5. Set idler sprocket to the desired chain tightness.			EOT	
6. Is pump to be installed belt driven?	7	9		
7. Install belt drive to pulley.			8	
8. Adjust pump bracket to allow for only one half inch movement in belt.			EOT	
9. Is pump to be installed PTO driven?	10	3		
10. Attach PTO to drive mechanism.			EOT	

TASK ANALYSIS

DOMAIN: ASSEMBLE BOOM-TYPE EQUIPMENT

I. Task 2: Assemble Boom Type Chemical Equipment.

II. Task Performance Cue(s): Employer asks you to assemble boom type chemical equipment.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Attach boom into 3 segment so that outer two segments can fold to corresponding sides of the truck or high clearance sprayer.			2	
2. Attach a series of nozzle attachments 37 inches apart on the booms.			3	
3. Attach a series of nozzle attachments 30" apart.			4	
4. Attach on T-shaped nozzle bodies in the middle of the section on 1" tubing.			5	
5. Attach end nozzles to the end of the booms with 1" tubing.			6	
6. Attach 3 hoses to the outlet tank.			7	
7. Attach a hose to each different segment of the 3 boom segments.			8	
8. Is boom being assembled for existing crop?	9	EOT		
9. Attach drop nozzles to the boom spraying attachments if required for job.			EOT	

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DOMAIN: ASSEMBLE BOOM-TYPE EQUIPMENT

TASK 1: Assemble Applicating Pump

Generalizable to a Task in the Assemble Boom-Type Equipment Domain	Generalizable to all Assemble Applicating Pump Tasks	Transferrable to all Tasks in the Assemble Boom-Type Equipment Domain	Transferrable to all Assemble Applicating Pump Tasks
ST #1		ST #1	
Assemble Pump		Assemble Pump	
Learning Content:		Learning Content:	
1. Rules for assembling pump.		1. Read drawing and follow directions.	
2. Rules for installing chain drive.		2. Install drive mechanism.	
3. Rules for installing belt drive.		3. Install bolts.	
4. Rules for attaching PTO drive.		4. Assemble parts.	
		5. Adjust slack in drive mechanisms.	

DOMAIN: ASSEMBLE BOOM-TYPE EQUIPMENT

TASK 2: Assemble Boom-Type Chemical Equipment

Generalizable to all Tasks in the Assemble Boom-Type Equipment Domain	Generalizable to all Assemble Boom-Type Chemical Equipment Tasks	Transferrable to all Tasks in the Assemble Boom-Type Equipment Domain	Transferrable to all Assemble Boom-Type Chemical Equipment Tasks
ST #1	ST #1	ST #1	ST #1
Assemble Equipment	Assemble Equipment	Assemble Equipment	Assemble Equipment
Learning Content:	Learning Content:	Learning Content:	Learning Content:
1. Rules for assembling pump.	Rules for assembling equipment.	1. Read drawing and follow directions.	1. Assemble pipe.
2. Rules for installing chain drive.		2. Install drive mechanism.	2. Assemble nozzles.
3. Rules for installing belt drive.		3. Install belts.	3. Adjust height.
4. Rules for attaching PTO drive.		4. Assemble parts.	4. Adjust angle of spray.
		5. Adjust slack in drive mechanism.	5. Test for leaks.
			6. Assemble hose fittings.
			7. Attach drop booms if needed for job.
			8. Attach nozzles.

DATA SHEET A

CONTENT LIMITS

DOMAIN: ASSEMBLE BOOM-TYPE EQUIPMENT

Section I. Assemble Boom-Type Equipment

- A. Setting Boom Height
- B. Nozzle Spacing
  - Adjust to desired row width
- C. Nozzle Types
  - 1. Flat fan
  - 2. Cone
  - 3. Even fan
  - 4. Flooding flat fan
- D. Attaching Drop Nozzles

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DATA SHEET B

CONTENT LIMITS

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

Section I. Assembling Pump

- A. Installing Bolts to the Plate and Pump Bracket

Section II. Installing Drive Mechanism

- A. Using Chain Drive
- B. Using Belt Drive
- C. Using PTO Drive

PLANNING FORMAT

DRT 1.1

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

Subtask: Assemble Applicating Pump

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Operators manual for applicating pump
2. Applicating pump
3. Mounting bracket
4. Equipment necessary for attaching either a chain, belt or PTO drive mechanism
5. Appropriate handouts for proper hook-up and adjustment of drive mechanism.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Locating proper manual and handouts for pump being used
2. Proper mounting of applicating pump
3. Proper attachment of drive mechanism
4. Proper adjustment of drive mechanism.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

For this test you will be required to perform the following:

1. Select an applicating pump to work with
2. Locate manual for that pump
3. Properly mount applicating pump
4. Select proper drive mechanism
5. Attach drive mechanism to pump
6. Properly adjust or connect drive mechanism to applicating pump.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Attach pump to mount or stand correctly.
		2. If chain drive, properly adjusted idler sprocket for desired chain tightness.
		3. If belt driven, correctly adjusted mount or idler for proper belt tension.
		4. If PTO Drive, check connection to assure pin has released and locked PTO shaft into position.

A* = Acceptable
U = Unacceptable

PLANNING FORMAT

DRT 2.1

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

Subtask: Assemble Boom-Type Chemical Equipment

Content Limits

See Data Sheet A, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Disassembled boom-type sprayer
2. Nozzles, hoses, etc. necessary for reconstruction of sprayer
3. Manual for sprayer being used
4. Tools needed for sprayer reconstruction
5. Diagrams and drawings needed to properly put the sprayer together.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Attaching boom in three hinging sections
2. Proper placement of tubing, nozzles, etc. for sprayer to function properly
3. Correct adjustment of sprayer equipment
4. Proper adjustment of sprayer nozzles
5. Proper attachment and use of drop nozzles.

EXAMINEE INSTRUCTIONS

DRT 2.1

DOMAIN: ASSEMBLE BOOM TYPE EQUIPMENT

For this test you will be required to perform the following:

1. Correctly attach three-segment boom
2. Attach nozzles properly and place at desired row width
3. Attach all hoses and holders in proper position
4. Proper attachment of end nozzles
5. Attachment of drop nozzles if required for job.

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

TASK 1: Correct Head and Tail Light Electrical Shorts

PERFORMANCE OBJECTIVE

Given a vehicle with a shorted wire or open circuit, a circuit tester, electricians pliers, insulation stripper, replacement wire, electricians tape, wire connectors, screwdriver, rosin core solder, soldering equipment, and a service manual, locate and repair the short or open circuit so that the light works.

PERFORMANCE GUIDE

1. Determine that light bulb is not loose.
2. Inspect for corrosion of terminals.
3. Determine that all wires are tightly connected in place.
4. Determine that all insulators on light fixtures are in good condition. Replace any cracked or worn insulators.
5. Determine that all wires are free from damage and that there is no bare wiring showing. Replace any wires that are bare or damaged.
6. Check light operation.

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

TASK 2: Replacing Head and Tail Light Bulbs

PERFORMANCE OBJECTIVE

Given flat and cross point screwdrivers, replacement head and tail light bulbs, and equipment with malfunctioning head and tail light bulbs, replace all malfunctioning lights. Upon completion, all the head and tail light bulbs will light.

PERFORMANCE GUIDE

1. Determine which light is not working.
2. Remove bulb from socket.
    a. check bulb for continuity or burning out
    b. replace bulb if the old one is bad
3. Check to make sure new bulb works by operating lights.

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

TASK 3: Replace Head and Tail Light Wiring

PERFORMANCE OBJECTIVE

Given replacement head and tail light wiring, flat and cross point screwdriver, ¼" drive socket set, electricians tape, wire connectors, electricians pliers, insulation strippers, circuit tester, replace faulty head and tail light wires. Upon completion, all head and tail lights will operate.

PERFORMANCE GUIDE

1. Determine which wires are not working by checking current at light socket.
2. Trace the circuit and check each of the connections for shorts.
3. Loosen screws holding the faulty wiring. Remove faulty wiring.
4. Replace faulty wiring with new wiring.
5. Tighten wire down with holding screws.
6. Check system to see if the lights are working.

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

I. Task 1: Correct Head and Tail Light Electrical Shorts

II. Task Performance Cue(s): Employer asks you to correct electrical shorts in head and tail light wiring.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Are all of the wires tightly connected in place?	2	4		
2. Are all insulators on light fixtures in good condition.	3	5		
3. Are all of the wires free from damage with no bare wires showing?	7	6		
4. Tightly connect wires to proper place.			2	
5. Replace cracked or worn insulators.			3	
6. Replace any wires that have bare wires showing.			7	
7. Check system to see if there is a short.			EOT	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

I. Task 2: Replace Head and Tail Light Bulbs

II. Task Performance Cue(s): Employer asks you to replace head and tail light bulbs.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine which light is not working.			2	
2. Is there a fuse for the light circuit?	7	3		
3. Remove bulb from socket.			4	
4. Check bulb for continuity or burning out.			5	
5. Replace bulb with new bulb.			6	
6. Check light so see if operating with new bulb.			EOT	
7. Check fuse and replace if faulty.			3	

TASK ANALYSIS

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

I. TASK 3: Replace Head and Tail Light Wiring

II. Task Performance Cue(s): Employer asks you to replace head and tail light wiring.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Determine which wires are not working by checking at light socket using a test light.			2	
2. Trace the circuit and check each of the connectors for shorts, using the test light.			3	
3. Loosen screws holding the faulty wiring.			4	
4. Remove faulty wiring.			5	
5. Replace faulty wiring with new wiring.			6	
6. Tighten wire down with holding screws.			7	
7. Check system to see if lights are working.			EOT	

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

TASK 1: Correct Head and Tail Light Electrical Shorts

Generalizable to all Tasks in the Inspection and Maintenance of Electrical Systems Domain	Generalizable to the Correct Head and Tail Light Electrical Shorts Task	Transferrable to all Tasks in the Inspection and Maintenance of Electrical Systems Domain	Transferrable to the Correct Head and Tail Light Electrical Shorts Task
ST #1 Inspection Learning Content: Rules for determining why head and tail lights are not functioning.		ST #1 Inspection Learning Content: 1. Check light socket with test light. 2. Test bulbs. 3. Check fuses. 4. Check wire connectors. 5. Check fixture insulators. 6. Check wires for damage.	
	ST #2 Correcting Shorts Learning Content: Rules for correcting electrical shorts.		ST #2 Correcting Shorts Learning Content: 1. Repair system to eliminate shorts. 2. Operate lights to determine proper operation. 3. Store tools in proper place. 4. Clean up work area.

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

TASK 2: Replace Head and Tail Light Bulbs

Generalizable to all Tasks in the Inspection and Maintenance of Lighting System Domain	Generalizable to the Replace Head and Tail Light Bulbs Task	Transferrable to all Tasks in the Inspection and Maintenance of Lighting System Domain	Transferrable to the Replace Head and Tail Light Bulbs Task
ST #1 Inspection Learning Content: Rules for determining why head and tail lights are not functioning.		ST #1 Inspection Learning Content: 1. Check light socket with test light. 2. Test bulbs. 3. Check fuses. 4. Check wire connectors. 5. Check fixture insulators. 6. Check wires for damage.	
	ST #2 Bulb Replacement Learning Content: Rules for replacing bulbs.		ST #2 Bulb Replacement Learning Content: 1. Remove bulb. 2. Replace bulb. 3. Inspect fuses. 4. Replace lenses. 5. Check operation. 6. Store tools. 7. Clean up work area.

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

TASK : Replace Head and Tail Light Wiring

Generalizable to all Tasks in the Inspection and Maintenance of Lighting System Domain	Generalizable to the Replace Head and Tail Light Wiring Task	Transferrable to all Tasks in the Inspection and Maintenance of Lighting System Domain	Transferrable to the Replace Head and Tail Light Wiring Task.
ST #1 Inspection Learning Content Rules for determining why head and tail lights are not functioning.		ST #1 Inspection Learning Content: 1. Check light socket with test light. 2. Test bulbs. 3. Check fuses. 4. Check wire connectors. 5. Check fixture insulation. 6. Check wires for damage.	
	ST #2 Replacing Wire Learning Content: Rules for replacing wiring.		ST #2 Replacing Wire Learning Content: 1. Remove wiring. 2. Replace wiring. 3. Check operation. 4. Store tools. 5. Clean up work area.

DATA SHEET A

CONTENT LIMITS

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

Section I. Correcting Head and Tail Light Electrical Shorts

A. Connections

1. Wire nuts
2. Solder
3. Terminal caps
4. Compression snap locks etc.

B. Insulators

1. Bakalite
2. Neoprene
3. Plastic tape

C. Wiring

1. Size-primary-secondary
2. Insulation
3. Color and tracing identification

Section II. Replace Head and Tail Light Bulbs

A. Types

1. Bayonet base-single pole
2. Bayonet base-double pole
3. Two filament
4. Single filament

B. Candlepower

1. Head lamps
2. Tail lamps
3. Clearance lamps
4. Lenses
    a. glass
    b. plastic

C. Testing

1. Continuity
2. Operation
3. Fuses

Section III. Replace Head and Tail Light Wiring

A. Identifying Faulty Wiring

    1. Cracked
    2. Abrasion
    3. Broken
    4. Corrosion

B. Replacing Faulty Wiring

    1. Removal
    2. Installing new wiring

DATA SHEET B

CONTENT LIMITS

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

Section I. Inspection

- A. Testing
    - 1. Test light for socket
    - 2. Continuity meter
        - a. bulbs
        - b. fuse
        - c. lighting circuits
- B. Inspection for Damage
    - 1. Insulators
    - 2. Wires
    - 3. Connections
    - 4. Corrosion

PLANNING FORMAT

DRT 1.1, 1.2, 2.1, 2.2, 3.1, and 3.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

Subtasks: Inspection
Correcting Shorts
Bulb Replacement
Replacing Wire

Content Limits

See Data Sheet A, Sections I, II, and III.
See Data Sheet B Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Vehicle with mal-functioning light system
2. Testing light and continuity meter
3. Replacement wire
4. Replacement connectors
5. Replacement fuses
6. Replacement bulbs
7. Access to tools
8. Electrical tape.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Identifying the source of problem in a vehicle with lighting system malfunction
2. Using a test light in identifying the problem
3. Correcting an electrical short
4. Replacing burned out bulbs
5. Installing a new fuse
6. Replacing faulty wiring.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, 2.1, 2.2, 3.1, and 3.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

For this test you will be required to perform the following:

1. Identify the source of problem in a vehicle with lighting system malfunction
2. Use a test light in identifying the problem
3. Correct an electrical short
4. Replace a burned out bulb
5. Install a new fuse
6. Replace faulty wiring.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, 2.1, 2.2, 3.1, and 3.2

DOMAIN: INSPECTION AND MAINTENANCE OF LIGHTING SYSTEM

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Correctly identified electrical problems
		a. electrical short
		b. burned out bulb
		c. faulty fuse
		d. damaged wire
		e. cracked or worn insulator
		2. Correctly used test light in determining problems.
		3. Corrected electrical short.
		4. Replaced burned out bulb.
		5. Installed new fuse.
		6. Replaced faulty wiring.
		7. Restored vehicle lighting system to proper operation.
		8. Stored tools in proper place and order.
		9. Cleaned up work area.

A* = Acceptable
U = Unacceptable

DOMAIN: CHANGE OIL AND FILTERS

TASK: Change Oil and Oil Filter on Motorized Vehicles

PERFORMANCE OBJECTIVE

Given a wrench for the drain plug, new oil and oil filter of the type and grade recommended in the operators manual, clean rags, a container for the old oil, and an oil filter wrench, change the oil and oil filter. When completed, the dip stick will show the oil just at, but not exceeding the full mark, and there will be no leaks around the oil filter.

PERFORMANCE GUIDE:

1. Operate engine until normal operating temperature is reached.
2. Locate and remove plug on the bottom of the oil pan. Drain old engine oil into a container.
3. Locate and replace oil filter with the same type.
4. Replace drain plug and tighten same.
5. Put in new oil.
6. Sart engine and operate in low gear for a few minutes.
    a. Check oil level with dip stick
    b. Check for leaks at the oil drain plug and oil filter
    c. Check oil pressure gauge
7. Store used oil in a closed container or properly dispose of it.

TASK ANALYSIS

DOMAIN: CHANGE OIL FILTERS

I. **Task Statement:** Change oil and oil filter on motorized vehicles.

II. **Task Performance Cue(s):** Employer asks you to change oil and oil filter on motorized vehicles.

III. **Task Performance Procedures:**

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Operate engine until normal operating temperature is reached.			2	
2. Locate and clean around plug then remove.			3	
3. Drain engine oil into container (approximately 5 quarts).			4	
4. Locate and replace oil filter with same type.			5	
5. Flush crankcase according to directions given in operators manual.			6	
6. Replace drain plug and tighten same.			7	
7. Locate fill plug.			8	
8. Clean top of new oil can and fill crankcase with oil specified as to amount and type in operators manual.			9	
9. Connect coil to distributor wire.			10	
10. Start engine and operate in low gear a few minutes, check level with dip stick. Add oil to "Full" line.			11	
11. Check pressure gauge and check for oil leaks.			12	
12. Stop engine, recheck oil level, add if needed.			13	
13. Store used oil in closed container and/or properly dispose of.			EOT	

DOMAIN: CHANGE OIL AND FILTERS

Task: Change Oil and Filter on Motorized Vehicles

Generalizable to all Tasks in the Change Oil and Filters Domain	Generalizable to the Change Oil and Oil Filter on Motorized Vehicles Task	Transferrable to all Tasks in the Change Oil and Filters Domain	Transferrable to the Change Oil and Oil Filters on Motorized Vehicles Task
ST #1		ST #1	
Removing Oil and Replacing Filter and Oil		Removing Oil and Replacing Filter and Oil	
Learning Content:		Learning Content:	
1. Rules for removing oil.		1. Operate engine until normal operating temperature is reached.	
2. Rules for selecting oil.		2. Disconnect coil wire.	
3. Rules for selecting oil filters.		3. Drain oil sump.	
4. Rules for removing oil filter		4. Remove and replace filter	
5. Rules for replacing oil filter.		5. Flush crankcase.	
6. Rules for replacing oil.		6. Add new oil.	
		7. Check for leaks	
		8. Check oil level.	
		9. Check pressure gauge.	
		10. Dispose of used oil.	
		11. Clean up.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: CHANGE OIL AND FILTERS

Section I. Changing Oil and Filter

A. Preparation for Oil Change

1. Engine warm up
2. Removal of coil wire
3. Drain plug removal
4. Draining engine oil
5. Locating and replacing oil filter
6. Flushing crankcase
7. Replacing drain plug

B. Oil Selection

1. Things to consider
    - a. oil viscosity
    - b. proper type (quality) of oil
      additives vs. non-additives
    - c. operating conditions
        - 1) light vs. heavy loads
        - 2) hot vs. cold temperature

C. Replacing Oil

1. Locating and cleaning fill plug
2. Filling according to owner's manual
3. Connecting coil wire
4. Operating engine
5. Checking for oil pressure and leaks
6. Rechecking oil level
7. Storing or disposing of old oil

PLANNING FORMAT

DRT 1.1

DOMAIN: CHANGING OIL AND OIL FILTERS

Subtask: Removing oil and Replacing Filter and Oil.

Content Limits

See Data Sheet B, Section I

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Operable engine
2. Operators manual for particular engine
3. Tools and equipment needed to replace oil and filter
4. New oil and filter.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Using the owners manual
2. Proper safety procedures
3. Using tools and equipment correctly
4. Procedures for draining the oil
5. Removal and replacement of oil filter
6. Procedures for refilling engine with oil and checking for any complications.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: CHANGING OIL AND OIL FILTERS

For this test you will be required to perform the following:

1. Select an engine to work with
2. Identify specifications in owners manual for changing oil
3. Select proper tools and equipment needed
4. Drain oil correctly
5. Replace oil and filter correctly
6. Start engine and check for complications.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: CHANGING OIL AND OIL FILTERS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Discriminated proper owners manual
		2. Found appropriate specifications
		3. Warmed engine up
		4. Replaced drain plug and filter
		5. Added new oil
		6. Checked for leaks with engine running.

A* = Acceptable
U = Unacceptable

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

TASK: Change Oil in Oil Bath Air Filters

PERFORMANCE OBJECTIVE

Given an engine with an oil bath air filter, screwdriver, and adjustable end wrench, oil drain pan, replacement oil, clean rags, and service manual, remove and replace the oil in an oil bath air filter following the manufacturer's recommended procedures. Upon replacement of the oil, there will be no leaks from the oil bath air filter.

PERFORMANCE GUIDE

1. Read owners manual for manufacturer's recommendations.
2. Remove oil cup at the bottom of the filter.
3. Empty old oil and dirt from oil cup into a proper container.
4. Clean out interior of oil cup with a clean rag.
5. Refill to "oil level" line with manufacturer's recommended oil.
6. Replace oil cup to the bottom of the filter.

TASK ANALYSIS

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

I. Task Statement: Change Oil in Oil Bath Air Filters

II. Task Performance Cue(s): Employer asks you to change oil in oil bath air filters

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Have you read owner's manual for proper oil replacement?	3	2		
2. Read manual for manufacturer's recommendations.			3	
3. Remove oil cup at the bottom of the filter.			4	
4. Empty old oil and dirt from oil cup into a proper container.			5	
5. Clean out interior of oil cup.			6	
6. Refill to "Oil level" with manufacturers ecommended oil.			7	
7. Replace oil cup to the bottom of the filter.			EOT	

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

TASK: Change Oil in Oil Bath Air Filters

Generalizable to all Tasks in the Change Oil in Oil Bath Filters Domain	Generalizable to the Change Oil in Oil Bath Air Filter Task	Transferrable to all Tasks in the Change Oil in Oil Bath Filters Domain	Transferrable to the Change Oil in Oil Bath Air Filters Task
ST #1 Changing Oil Learning Content: 1. Rules for removing oil. 2. Rules for replacing oil.		ST #1 Changing Oil Learning Content: 1. Read manual. 2. Identify type of filter. 3. Remove oil cup, drain, clean, and replace with clean oil. 4. Clean filter element. 5. Fill to proper oil level. 6. Replace oil cup.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

Section I. Removing Old Oil in Oil Bath Air Filters

- A. Identifying Type of Oil Recommended.
- B. Emptying Oil and Dirt from Filter Cup.
- C. Clean Cup.

Section II. Replacing Oil in Oil Bath Air Filter

- A. Refilling to Proper "Oil Level" with Correct Type of Oil.
- B. Replacing Oil Cup on the Bottom of the Filter.

PLANNING FORMAT

DRT 1.1

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

Subtask: Change Oil in Oil Bath Air Filters

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Engine using an oil bath air filter
2. Instructional manual
3. Necessary tools and equipment
4. New oil.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Removing the oil cup
2. Disposing of old oil
3. Cleaning cup
4. Refilling with new oil
5. Reinstalling cup on filter.

EXAMINEE INSTRUCTION

DRT 1.1

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

For this test you will be required to perform the following:

1. Empty old oil and dirt from filter cup
2. Clean oil cup thoroughly
3. Identify and obtain recommended oil
4. Refill oil cup to proper level with new oil
5. Replace oil cup on the bottom of the filter holder.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: CHANGE OIL IN OIL BATH AIR FILTERS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Has oil cup been cleaned thoroughly.
		2. Has student selected proper oil and oil filter.
		3. Refilled oil to proper level.
		4. Secured filter cap tightly on holder.

A* = Acceptable
U = Unacceptable

DOMAIN: CHANGE CARTRIDGE AIR FILTERS

TASK: Change Cartridge Air Filters

PERFORMANCE OBJECTIVE

Given a new cartridge air filter, a service manual, screwdriver, combination pliers and an adjustable end wrench, replace the cartridge air filter on an engine. The new cartridge air filter will be clean, installed according to directions in the service manual, and function to specifications.

PERFORMANCE GUIDE

1. Obtain tools and replacement filter.
2. Remove air breather cover.
3. Remove old cartridge air filter.
4. Wipe out inside of breather with a dry rag.
5. Install new cartridge air filter.
6. Replace air breather cover.
7. Record maintenance on equipment maintenance record.
8. Return tools and discard old air filter in proper place.

TASK ANALYSIS

DOMAIN: CHANGE CARTRIDGE AIR FILTERS

I. **Task** Statement: Change Cartridge Air Filters.

II. **Task Performance Cue(s):** Employer asks you to change cartridge air filters.

III. **Task Performance Procedures:**

A. **When a decision must be made, indicate alternatives as "Yes-No" answers to questions.**

B. **List performance steps by most frequently occurring sequence.**

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Find maintenance schedule for vehicle.			2	
2. Read maintenance schedule.			3	
3. Is the maintenance due?	4	12		
4. Obtain tools and obtain replacement filter.			5	
5. Remove air breather cover.			6	
6. Remove old cartridge air filter.			7	
7. Wipe out inside of breather with a dry rag.			8	
8. Install new cartridge air filter.			9	
9. Replace air breather cover.			10	
10. Record maintenance on record.			11	
11. Replace maintenance schedule, tools, etc...			EOT	
12. Visually observe air filter.			13	
13. Does filter need changing.	4	EOT		

DOMAIN: CHANGE CARTRIDGE AIR FILTER

TASK: Change Cartridge Air Filter

Generalizable to all Tasks in the Change Cartridge Air Filter Domain	Generalizable to the Change Cartridge Air Filter Task	Transferrable to all Tasks in the Change Cartridge Air Filter Domain	Transferrable to the Change Cartridge Air Filter Task
ST #1		ST #1	
Collect Material		Collect Material	
Learning Content:		Learning Content:	
Rules for determining if maintenance is due.		1. Obtain maintenance schedule.	
		2. Interpret maintenance schedule.	
		3. Obtain tools and replacement filter.	
ST #2		ST #2	
Replacing Filter		Replacing Filter	
Learning Content:		Learning Content:	
Rules for replacing filter.		1. Remove old filter.	
		2. Replace filter.	
		3. Clean filter and breather.	
		4. Record maintenance.	
		5. Dispose of cartridge.	
		6. Replace tools and equipment used.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: CHANGE CARTRIDGE AIR FILTERS

Section I. Inspecting Cartridge Filter

A. Obtaining Maintenance Schedule.

B. Determining if Maintenance is Due.
  1. Interpret maintenance schedule
  2. Visually inspect filter.

Section II. Change Cartridge Filter

A. Removing Old Cartridge Air Filter.

B. Cleaning out Breather with Dry Cloth.

C. Installing New Cartridge Air Filter.

D. Replacing Air Breather Cover.

E. Recording Maintenance on Record and Cleaning Area.

PLANNING FORMAT

DRT 1.1 and 1.2

DOMAIN: CHANGE CARTRIDGE AIR FILTERS

Subtasks: Inspecting Cartridge Filter
Change Cartridge Filter

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Engine to service
2. Service manual
3. New cartridge air filter if needed
4. Maintenance schedule on engine
5. Necessary tools and equipment.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Interpreting a maintenance schedule
2. Determining if cartridge air filter needs replacement
3. Preparing breather for new filter
4. Installing new cartridge filter
5. Recording maintenance on record.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 1.2

DOMAIN: CHANGE CARTRIDGE AIR FILTERS

For this test you will be required to perform the following:

1. Interpret maintenance schedule
2. Inspect old cartridge air filter
3. Determine if old filter needs to be replaced
4. Prepare breather for new filter
5. Replace cartridge air filter
6. Record maintenance done and clean area.

DOMAIN: CLEAN CLOGGED FILTERS

TASK: Clean Clogged Filters

PERFORMANCE OBJECTIVE

Using the proper cleaning solvent, disassemble, clean and reassemble clogged filters. All processes on the performance checklist must be rated acceptable.

PERFORMANCE GUIDE

1. Determine if there is straw or other debris on the outside of the element. Clean away debris.
2. Clean foreign matter from filter.
3. Wash filter in diesel fuel, or approved solvent.
4. Make sure all dirt is washed away from screen element.
5. Reassemble filter and put back in place.
6. Check all connections for tightness.

DOMAIN: CLEAN CLOGGED FILTERS

TASK: Clean Clogged Filters

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Removed any straw or other debris on the outside of the element.
		2. Cleaned foreign matter away from filter.
		3. Removed filter from engine.
		4. Washed filter in diesel fuel, or approved solvent.
		5. Made sure all dirt was washed away from the screen element.
		6. Reassembled filter and put it back in place.
		7. Made sure all connections were tight.

A* = Acceptable
U = Unacceptable

TASK ANALYSIS

DOMAIN: CLEAN CLOGGED FILTERS

I. Task Statement: Clean Clogged Filters.

II. Task Performance Cue(s): Employer asks you to clean clogged filters.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is there straw or other debris on the outside of the element?	2	3		
2. Clean foreign matter away from filter.			3	
3. Remove filter from engine.			4	
4. Wash filter in tractor or diesel fuel (do not use gasoline due to flammability)			5	
5. Be sure all dirt is washed away from screen element.			6	
6. Reassemble filter and put back into place.			7	
7. Are all connections tight?	9	8		
8. Tighten all connections.			9	
9. Are hoses and gaskets in good condition?	EOT	10		
10. Replace bad hoses and gaskets.			EOT	

DOMAIN: CLEAN CLOGGED FILTERS

TASK: Clean Clogged Filters

Generalizable to all Tasks in the Clean Clogged Filters Domain	Generalizable to the Clean Clogged Filters Task	Transferrable to all Tasks in the Clean Clogged Filters Domain	Transferrable to the Clean Clogged Filters Task
ST #1 Cleaning Clogged Filters Learning Content: Rules for cleaning clogged filters.		ST #1 Cleaning Clogged Filters Learning Content: 1. Clean filter area. 2. Remove filter. 3. Clean with fuel or diesel oil. 4. Clean screen. 5. Reassemble filter. 6. Inspect hoses and gaskets. 7. Replace defective hoses and gaskets.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: CLEAN CLOGGED FILTERS

Section I. Cleaning Clogged Filters

A. Cleaning Foreign Materials from Filter.

B. Washing Filter in Deisel Fuel to Remove all Dirt.

C. Replacing Bad Hoses and Gaskets if Required.

PLANNING FORMAT

DRT 1.1

DOMAIN: CLEAN CLOGGED FILTERS

Subtask: Cleaning Clogged Filters

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Clogged filter
2. Cleaning solvent or diesel fuel
3. Cleaning tank
4. Necessary tools and equipment
5. New hoses and gaskets if needed.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Properly removing filter
2. Using proper solvent
3. Cleaning filter and screen
4. Reassembling filter
5. Replacing defective hoses and gaskets if required.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: CLEAN CLOGGED FILTERS

For this test you will be required to perform the following:

1. Clean filter area
2. Remove filter
3. Clean filter with solvent or diesel fuel
4. Clean screen
5. Reassemble filter
6. Inspect hoses and gaskets
7. Replace any defective hoses or gaskets.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: CLEAN CLOGGED FILTERS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Removed any straw or other debris on the outside of the element.
		2. Cleaned foreign material away from filter.
		3. Washed filter in diesel fuel or approved solvent.
		4. Cleaned dirt from filter screen.
		5. Reassembled filter and made sure all connections were tight.

A* = Acceptable
U = Unacceptable

DOMAIN: INSPECT RESPIRATORS

TASK: Check Working Condition of Respirator

PERFORMANCE OBJECTIVE

Given a respirator and service manual, check the respirator and service if necessary to meet the manufacturer's specificaitons. Upon completion of the inspection, all processes on the performance checklist must be rated acceptable.

PERFORMANCE GUIDE

1. Determine if the respirator has been cleaned.
2. Determine if the respirator is the cartridge type.
3. Determine if the respirator is the self-contained type.
4. Determine if there is sufficient air in the tank.
5. Determine if regulator fits properly.
6. Determine if the respirator is the canister type.

DOMAIN: INSPECT RESPIRATORS

TASK: Check Working Condition of Respirator

PERFORMANCE CHECKLIST

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Determined if the respirator had been cleaned.
		2. Determined if the respirator was the cartridge type.
		3. Check to see the respirator fit well around the face to prevent leakage.
		4. Determined if the respirator was self contained type.
		5. Checked to be sure respirator fit well to prevent leaks.
		6. Determined if there was sufficient air in the tank.
		7. Determined if regulator fit properly.
		8. Determined if the respirator was the canister type.
		9. Checked to see the respirator fit well to prevent leaks.

A* = Acceptable
U = Unacceptable

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TASK ANALYSIS

DOMAIN: INSPECT RESPIRATORS

I. **Task** Statement: Check Working Condition of Respirator.

II. **Task Performance Cue(s):** Employer asks you to check working condition of respirator.

III. **Task Performance** Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Has the respirator been cleaned?	3	2		
2. Wash respirator.			3	
3. Is the respirator the cartridge type?	4	5		
4. Replace cartridge after 6 hours use, or by label on cartridge.			6	
5. Is the respirator the self-contained type?	8	12		
6. Does it fit well around face to prevent leakage?	EOT	7		
7. Adjust to fit or try another size.			EOT	
8. Is there sufficient air in tank?	9	10		
9. Does regulator fit properly?	6	11		
10. Add additional compressed air.			8	
11. Adjust regulator.			6	
12. Is the respirator the canister type?	13	EOT		
13. Should canister be replaced?	14	6		
14. Replace with appropriate canister.			EOT	

DOMAIN: INSPECT RESPIRATORS

TASK: Check Working Condition of Respirator

Generalizable to all Tasks in the Inspect Respirators Domain	Generalizable to the Check Working Condition of Respirator Task	Transferrable to all Tasks in the Inspect Respirators Domain	Transferrable to the Check Working Condition of Respirator Task
ST #1 Examine Respirators Learning Content: 1. Rules for examining cartridge respirator. 2. Rules for examining self-contained types. 3. Rules for examining canister types.		ST #1 Examine Respirators Learning Content: 1. Inspect respirators. 2. Clean respirators. 3. Remove and/or replace cartridge as needed. 4. Adjust respirator to prevent leakage about face. 5. Check air content. 6. Adjust regulator. 7. Add compressed air as needed. 8. Inspect canister. 9. Replace canister as needed. 10. Check fit to prevent leakage.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: INSPECT RESPIRATORS

Section I. Examining Respirators

A. Examining Cartridge Respirators
   1. Cleaning cartridge type respirator
   2. Replacing cartridge according to recommendation on label.

B. Examining Self-Contained Types
   1. Adjusting fit to prevent leakage
   2. Determining if air in tank is sufficient
   3. Adjusting regulator for proper fit

C. Examining Canister Types
   1. Determining if canister needs replacement
   2. Replacing with an appropriate canister

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PLANNING FORMAT

DRT 1.1

DOMAIN: INSPECT RESPIRATORS

Subtask: Examining Respirators

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Manuals of instruction for all three types
2. A respirator
3. Replacement cartridges or canisters
4. Safety handouts.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Determining respirator types
2. Cleaning respirators
3. Replacing cartridge on canister
4. Determining proper fit to prevent leaks
5. Checking for proper operation.

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EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: INSPECT RESPIRATORS

For this test you will be required to perform the following:

1. Select a respirator
2. Determine which type of respirator you are working with
3. Cleaning or replacing cartridges
4. Replacing canisters
5. Checking air tank on self-contained respirator for air level
6. Adjusting fit of mask and regulator to prevent leakage.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: INSPECT RESPIRATORS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Cleaned respirator if needed.
		2. Replaced cartridge if needed.
		3. Checked to see if respirator fit well to prevent leaks.
		4. Checked air level in tank on self-contained respirator.
		5. Determined if regulator fit properly.
		6. Replaced canister on canister type respirator if needed.

A* = Acceptable
U = Unacceptable

DOMAIN: CHANGE SPARK PLUGS

TASK: Change Spark Plugs

PERFORMANCE OBJECTIVE

Given an engine and a set of new spark plugs, an operator's manual, a spark plug wrench and a spark plug gauge, replace the old spark plugs and set the gap on the new spark plugs to 100 percent accuracy as specified by the operator's manual.

PERFORMANCE GUIDE

1. Check operator's manual for proper spark plug gap setting.
2. Remove spark plug wire from old spark plugs.
3. Blow debris away from around plug with an air hose.
4. Remove spark plug from engine.
5. Insert new plug after proper gap is set.
6. Torque to manufacturer's specification of tightness.
7. Reinstate spark plug wires.

TASK ANALYSIS

DOMAIN: CHANGE SPARK PLUGS

I. Task Statement: Change Spark Plugs.

II. Task Performance Cue(s): Employer asks you to change spark plugs.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Check operators manual for proper gap setting.			2	
2. Remove spark plug wire.			3	
3. Loosen spark plug and blow debris from around plug with an air hose.			4	
4. Remove spark plug from engine.			5	
5. Insert new plug after proper gap is set.			6	
6. Torque to manufacturer's specification of tightness.			7	
7. Reinstate spark plug wire.			EOT	

DOMAIN: CHANGE SPARK PLUGS

TASK: Change Spark Plugs

Generalizable to all Tasks in the Change Spark Plugs Domain	Generalizable to the Change Spark Plugs Task	Transferrable to all Tasks in the Change Spark Plugs Domain	Transferrable to the Change Spark Plugs Task
ST #1		ST #1	
Changing Spark Plugs		Changing Spark Plugs	
Learning Content:		Learning Content:	
1. Rules for removing spark plugs.		1. Read owners manual.	
2. Rules for replacing spark plugs.		2. Remove plug wires.	
		3. Clean around plugs with air.	
		4. Identify proper gap for plugs.	
		5. Remove plugs.	
		6. Replace or clean plug and gap plug properly.	
		7. Operate torque wrench to proper torque.	
		8. Install plug wires.	
		9. Inspect plug wires.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: CHANGE SPARK PLUGS

Section I. Change Spark Plugs

A. Spark Plugs
   1. Champion
   2. Autolite
   3. AC

B. Torque Wrenches
   1. Inch pounds
   2. Foot pounds

PLANNING FORMAT

DRT 1.1

DOMAIN: CHANGE SPARK PLUGS

Subtasks: Changing Spark Plugs

Content Limits

See Data Sheet B, Section I

Test Stimulus Characteristics

The student will be provided the following data, material, and supplies:

1. Engine to work with
2. Necessary tools and equipment
3. Service manual
4. New spark plugs.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Removing old spark plugs
2. Setting the gap on new plugs to manufacturers specification
3. Installing new spark plugs
4. Tightening plugs to manufacturer's specified torque
5. Installing plug wires in proper order.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: CHANGE SPARK PLUGS

For this test you will be required to perform the following:

1. Properly remove old spark plugs
2. Setting gap on new plugs to manufacturer's specifications
3. Installing new spark plugs
4. Tighten plugs to manufacturer's specified torque
5. Reinstalling spark plug wires in proper order.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: CHANGE SPARK PLUGS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Cleaned plug area before removing old plug.
		2. Labeled plug wires to ensure proper firing order when job is done.
		3. Tightened plugs to proper torque specifications.

A* = Acceptable
U = Unacceptable

DOMAIN: IGNITION POINTS

TASK 1: Change the Points

PERFORMANCE OBJECTIVE

Given a new set of points, an operator's manual, feeler gauge, and ignition tool set, replace the old points and set the new breaker points to 100 percent accuracy as specified by the operator's manual.

PERFORMANCE GUIDE

1. Carefully remove the distributor cap.
2. Loosen the lead screw and detach the lead.
3. Loosen the two screws holding the contact set to the breaker plate.
4. Wipe the breaker plate clean and oil the level post (if present).
5. Install new contacts.
   a. attach lead
   b. adjust point opening with feeler gauge to the manufacturer's specifications
   c. make sure contacts are properly aligned
   d. lubricate cam post as needed
6. Tighten all screws and recheck the point openings.
7. Replace distributor cap on its base.
8. Check engine for proper starting.

DOMAIN: IGNITION POINTS

TASK 2: Set the Points

PERFORMANCE OBJECTIVE

Given an operator's manual, a round feeler gauge, and ignition tool kit, set the breaker points to 100 percent accuracy as specified by the operator's manual.

PERFORMANCE GUIDE

1. Refer to the operator's manual for proper specifications.
2. Remove distributor cap.
3. Turn engine until cam opens breaker points to widest position.
4. Check points for proper spacing using a round feeler gauge. Make adjustments if necessary in proper spacing and alignment.
5. Recheck gap between points and wipe clean.
6. Replace distributor cap.
7. Check engine for proper starting.

TASK ANALYSIS

DOMAIN: IGNITION POINTS

I. Task 1: Change the Points.

II. Task Performance Cue(s): Employer asks you to change the breaker points on a vehicle.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Carefully remove the distributor cap.			2	
2. Loosen the lead screws and detach the leads.			3	
3. Loosen the two screws holding the contact set to the breaker plate.			4	
4. Slip the contact set out from under the screws.			5	
5. Wipe the breaker plate clean and lubricate the level post (if present).			6	
6. Install new contacts, attach lead and adjust the point opening, making sure the contacts are properly aligned.			7	
7. Tighten all screws and recheck the point opening.			8	
8. Lubricate the distributor as specified and reassemble the distributor cap to its base.			9	
9. Does engine start properly?	EOT	10		
10. Consult owners manual for other malfunction procedures.			EOT	

TASK ANALYSIS

DOMAIN: IGNITION POINTS

I. Task 2: Set the Points

II. Task Performance Cue(s): Employer asks you to set the points on an engine.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Do you have the proper operators manual?	3	2		
2. Obtain operators manual to match engine.			3	
3. Remove distributor cap.			4	
4. Turn engine until cam opens breaker points to widest position.			5	
5. Check points for proper spacing using round feeler gauge.				
6. Are any adjustments necessary for proper spacing and alignment?	7	9		
7. Make adjustments as necessary for proper spacing and alignment.			8	
8. Retighten points.			9	
9. Recheck gap between points and wipe clean.			10	
10. Reinstall distributor cap.			11	
11. Does engine start properly?	EOT	12		
12. Consult owners manual for other malfunction procedures.			EOT	

DOMAIN: IGNITION POINTS

TASK 1: Change the Points

Generalizable to all Tasks in the Ignition Points Domain	Generalizable to all Change the Points Tasks	Transferrable to all Tasks in the Ignition Points Domain	Transferrable to all Change the Points Tasks
	ST #1 Changing Points Learning Content: 1. Rules for removing old points. 2. Rules for replacing new points.		ST #1 Changing Points Learning Content: 1. Remove distributor cap. 2. Remove old points. 3. Set new points in place to proper gap with lobe of cam at highest point 4. Lubricate cam. 5. Dispose of old parts.
ST #2 Adjust the Points Learning Content: Rules for adjusting the points.		ST #2 Adjust the Points Learning Content: 1. Read owners manual. 2. Determine proper gap. 3. Set points. 4. Tighten. 5. Recheck point gap and alignment. 6. Check operation. 7. Lubricate if needed. 8. Reassemble distributor cap. 9. Clean up and replace tools.	

DOMAIN: IGNITION POINTS

TASK 2: Set the Points

Generalizable to all Tasks in the Ignition Points Domain	Generalizable to all Set the Points Tasks	Transferrable to all Tasks in the Ignition Points Domain	Transferrable to all Set the Points Tasks
ST #1 Adjust the Points Learning Content: Rules for adjusting the points.		ST #1 Adjust the Points Learning Content: 1. Read owners manual. 2. Determine proper gap. 3. Set points. 4. Tighten. 5. Recheck point gap and alignment. 6. Check operation. 7. Lubricate if needed. 8. Reassemble distributor cap. 9. Clean up and replace tools.	

DATA SHEET A

CONTENT LIMITS

DOMAIN: IGNITION POINTS

Section I. Changing the Points

- A. Removing Old Points
- B. Preparing Area for New Set of Points
- C. Replacing New Points
- D. Adjusting New Points
    1. Setting new points in place to proper gap with lobe of cam at highest point
    2. Lubricating cam
    3. Rechecking point gap and alignment
    4. Tightening point holder down

DATA SHEET B

CONTENT LIMITS

DOMAIN: IGNITION POINTS

Section I. Adjust the Points

A. Setting the Points
  1. Obtaining point gap recommendations for this particular engine model
  2. Setting new points in place to proper gap with lobe of cam at highest point
  3. Inserting feeler gauge to insure proper gap
  4. Adjusting point alignment
  5. Rechecking gap
  6. Tightening screws

PLANNING FORMAT

DRT 1.1, 1.2, and 2.1

DOMAIN: IGNITION POINTS

Subtasks: Removing Old Points
Replacing New Points
Setting New Points

Content Limits

See Data Sheet A and B, Section I

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Small or large engine
2. Owners manual for that engine
3. Engine points kit
4. Set of ignition tools
5. Appropriate Handout.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Proper removal of old points
2. Preparing area for installation of new points
3. Properly replacing new points
4. Correctly adjusting new points
5. Checking the dwell after points have been set
6. Properly reinstalling distributor cap
7. Clean up and dispose of old parts.

EXAMINEE INSTRUCTIONS

DRT 1.1, 1.2, and 2.1

DOMAIN: IGNITION POINTS

For this test you will be required to perform the following:

1. Select an engine and the manual for that engine
2. Remove the old set of points
3. Prepare the area for installation of the new points
4. Replace the new points
5. Properly adjust the points and set the dwell
6. Properly replace the distributor cap
7. Clean up and dispose of old parts.

DOMAIN: REPLACE IMPELLER PUMP

TASK: Replace Impeller Pump

PERFORMANCE OBJECTIVE

Given a replacement pump, ½" drive socket set, a box open end wrench set, screwdriver, plastic or rawhide hammer, drift pin punches, ball pein hammer, and service manual, replace the impeller pump on the given applicator. Upon completion, the impeller pump will function freely.

PERFORMANCE GUIDE

1. Loosen bolts on inlet flange.
2. Loosen bolts on outlet flange.
3. Loosen set screw on pulley.
4. Loosen bolts on hydraulic motor.
5. Remove belts.
6. Loosen bolts on pedestal.
7. Remove and replace impeller pump.
8. Replace belts.
9. Tighten bolts on pedestal.
10. Tighten bolts on hydraulic motor.
11. Tighten set screw on pulley.
12. Tighten bolts on outlet and inlet flange.

TASK ANALYSIS

DOMAIN: REPLACE IMPELLER PUMP

I. Task Statement: Replace Impeller Pump.

II. Task Performance Cue(s): Employer asked you to replace impeller pump.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the pump a roller-impeller?	3	2		
2. Is the pump a flexible-impeller?	22	1		
3. Loosen bolts on inlet flange.			4	
4. Loosen bolts on outlet flange.			5	
5. Is pump belt driven?	8	6		
6. Is pump PTO driven?	11	7		
7. Is pump chain driven?	12	5		
8. Loosen set screw on pully.				
9. Loosen bolts on the hydraulic motors.				
10. Remove belts.			14	
11. Remove fastener on PTO and take shaft off pump.			14	
12. Loosen idler sprocket.			13	
13. Remove chain.			14	
14. Loosen bolts on pedestal.			15	
15. Remove and replace impeller pump.			16	
16. Replace belts.			17	
17. Tighten bolts on pedestal.			18	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
18. Tighten bolts on hydraulic motor.			19	
19. Tighten set screw on pulley.			20	
20. Tighten bolts on outlet flange.			21	
21. Tighten bolts on inlet flange.			27	
22. Is it more economical to replace neoprene impeller?	23	3		
23. Remove impeller casing.			24	
24. Slide flexible impeller off shaft.			25	
25. Replace with manufacturer's specified impeller.			26	
26. Bolt outer casing back to pump housing.			27	
27. Attach drive mechanism, adjust and check for proper operation.			EOT	

DOMAIN: REPLACE IMPELLER PUMP

TASK: Replace Impeller Pump

Generalizable to all Tasks in the Replace Impeller Pump Domain	Generalizable to the Replace Impeller Pump Task	Transferrable to all Tasks in the Replace Impeller Pump Domain	Transferrable to the Replace Impeller Pump Task
ST #1 Replacing Pump Learning Content: 1. Rules for removing impeller pump. 2. Rules for replacing impeller pump.		ST #1 Replacing Pump Learning Content: 1. Loosen bolts on inlet flange. 2. Loosen bolts on outlet flange. 3. Loosen set screw on pulley. 4. Loosen bolts on the hydraulic motors. 5. Remove belts, chain or PTO shaft. 6. Loosen bolts on pedestal. 7. Remove and replace impeller pump. 8. Replace belts, chain or PTO shaft. 9. Tighten bolts on pedestal. 10. Tighten bolts on hydraulic motor. 11. Tighten set screw on pulley. 12. Tighten bolts on outlet flange. 13. Tighten bolts on inlet flange.	

DOMAIN: REPLACE IMPELLER PUMP

TASK: Replace Impeller Pump (Continued)

ST #2

Replace Flexible Neoprene Impeller

Learning Content:

1. Rules for removing flexible impeller.
2. Rules for replacing flexible impeller.

14. Adjust and check operation.

ST #2

Replace Flexible Neoprene Impeller

Learning Content:

1. Remove outer casing of pump.
2. Take out old flexible impeller.
3. Inspect offset shaft for excessive wear.
4. Replace with new flexible impeller.
5. Place outer casing back on pump housing.
6. Attach drive mechanism.
7. Adjust and check operation.

DATA SHEET B

CONTENT LIMITS

DOMAIN: REPLACE IMPELLER PUMP

Section I. Replacing Pump

- A. Removing Belt Drive from Pump
- B. Removing Chain Drive from Pump
- C. Removing PTO Drive from Pump
- D. Replacing Roller Impeller Pump
- E. Replacing Flexible Impeller Pump
- F. Replacing Drive Mechanism

Section II. Replacing Flexible Impeller

- A. Removing Belt Drive form Offset Shaft
- B. Removing Chain Drive from Offset Shaft
- C. Removing PTO Drive from Offset Shaft
- D. Taking Pump Casing Off
- E. Removing Flexible Neoprene Impeller
- F. Replacing Neoprene Impeller
- G. Tightening Pump Casing to Recommend Torque
- H. Replacing Drive Mechanism

PLANNING FORMAT

DRT 1.1 and 2.1

DOMAIN: REPLACE IMPELLER PUMP

Subtasks: Replacing Pump
Replacing Flexible Impeller

Content Limits

See Data Sheet B, Section I and II.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Impeller type pump
2. Service manual(s) for particular pump being used
3. Necessary tools and equipment
4. Replacement pump or parts.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Properly removing and replacing drive mechanism
2. Replacing impeller type pumps
3. Replacing individual flexible neoprene impeller
4. Properly removing and replacing pump casing
5. Adjusting and checking pump for proper operation.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 2.1

DOMAIN: REPLACE IMPELLER PUMP

For this test you will be required to perform the following:

1. Select a pump to work with
2. locate service manual for pump
3. If pump is a flexible impeller pump decide whether to replace pump or impeller
4. Removing the drive mechanism
5. Removal of impeller pump
6. Replacing impeller pump
7. If replacing flexible impeller, removal of pump casing is required
8. Replacing flexible impeller and pump casing
9. Replacing drive mechanism
10. Adjusting and checking pump for proper operation.

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PERFORMANCE CHECKLIST

DRT 1.1 and 2.1

DOMAIN: REPLACE IMPELLER PUMP

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Selected proper manual for pump being worked on.
		2. Properly removed drive mechanism.
		3. Made correct decision on replacement of pump or impeller, if working with a flexible impeller pump.
		4. Replaced pump or impeller correctly.
		5. Replaced drive mechanism correctly.
		6. Properly adjusted and checked pump operation.

A* = Acceptable
U = Unacceptable

DOMAIN: REPLACE POWER TAKE OFF SHAFT

TASK: Replace PTO (Power Take Off) Shaft

PERFORMANCE OVJECTIVE

Given replacement shaft, locking pin, open box end wrench set, plastic hammer, drift pin punch, combination pliers, and service manual, replace the power take off unit on assigned tractor in accordance with the manufacturer's service procedures. The shaft will function freely.

PERFORMANCE GUIDE

1. Determine the location of the quick lock fastener if the shaft has one. Remove the quick lock fastener.
2. Determine the location of the pin lock fastener if the shaft has one. Remove the pin lock fastener.
3. Take off shaft by either removing quick lock or taking out pin.
4. Place new shaft in position.
5. Fasten in place by either quick lock fastener or pin lock fastener.
6. Operate PTO shaft to check freedom of movement.

TASK ANALYSIS

DOMAIN: **REPLACE POWER TAKE OFF SHAFT**

I. Task Statement: **Replace PTO (Power Take Off) shaft.**

II. Task Performance Cue(s): **Employer asks you to replace power take off shaft.**

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does the shaft have a quick lock fastener?	3	2		
2. Does the shaft have a pin lock fastener?	3	4		
3. Take off shaft by either quick lock or taking out pin.			4	
4. Place new shaft in position.			5	
5. Fasten by quick lock or pin.			6	
6. Did the new shaft come already greased?	8	7		
7. Lubricate all grease fittings.			8	
8. Operate PTO shaft to check freedom of movement.			EOT	

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DOMAIN: REPLACE POWER TAKE OFF SHAFT

TASK: Replace Power Take Off Shaft

Generalizable to all Tasks in the Replace Power Take Off Shaft Domain	Generalizable to the Replace Power Take Off Shaft Task	Transferrable to all Tasks in the Replace Power Take Off Shaft Domain	Transferrable to the Replace Power Take Off Shaft Task
ST #1 Replace PTO Learning Content: 1. Rules for removing PTO. 2. Rules for replacing PTO. 3. Rules for checking operation of new shaft.		ST #1 Replace PTO Learning Content: 1. Inspect PTO. 2. Identify type of PTO. 3. Follow owners manual for proper type and remove worn shaft. 4. Replace shaft and fasten. 5. Check to see if shaft has been lubricated at factory, 6. Check new shaft for proper operation.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: REPLACE POWER TAKE-OFF SHAFT

Section I. Remove PTO Shaft

- A. Determining Type of Fastener
  - 1. Quick lock
  - 2. Pin lock
- B. Taking Pin or Lock Out
- C. Removing Old PTO Shaft

Section II. Replace PTO Shaft

- A. Replacing PTO Shaft
- B. Replacing Pin or Lock
- C. Lubricating Grease Fixtures
- D. Checking for Proper Operation

PLANNING FORMAT

DRT 1.1

DOMAIN: REPLACE POWER TAKE OFF SHAFT

Subtask: Replace Power Take Off Shaft

Content Limits

See Data Sheet B, Sections I and II.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Instructions for shaft replacement
2. Piece of equipment with worn power take off shaft
3. Necessary tools for removal of shaft
4. New PTO shaft
5. Lubricating gun if needed
6. Drive mechanism to check proper operation.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Identifying type of shaft fastener
2. Proper removal of old shaft
3. Preparation of new PTO shaft
4. Replacing new shaft correctly
5. Safely checking new shaft for proper operation.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: REPLACE POWER TAKE OFF SHAFT

For this test you will be required to perform the following:

1. Properly remove fastener
2. Removal of old shaft
3. Preparing new shaft for installation
4. Replacing new PTO shaft
5. Checking shaft for proper operation.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: REPLACE POWER TAKE OFF SHAFT

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Properly replaced pin or quick lock when replacing new shaft.
		2. Lubricated shaft if needed.
		3. Checked shaft for proper operation.

A* = Acceptable
U = Unacceptable

DOMAIN: REPLACE WORN BEARINGS

TASK : Replace Worn Bearings

PERFORMANCE OBJECTIVE

Given a piece of machinery with worn bearings, replacement bearings, a bearing press, bearing driver, wheel puller, emery cloth, oil, grease, bearing packer, ball pein hammer, open box end wrenches service manual and new replacement bearings, remove and replace the worn bearings in accordance with the manufacturer's procedures. Upon completion, the bearings will operate smoothly and without any noise.

PERFORMANCE GUIDE

1. Consult a technical manual or service manual for removal procedure if possible.
2. Determine if the bearing is to be removed using mechanical or hydraulic pullers.
    a. place pullers in position over the bearing
    b. screw the pullers so they tighten and pull the bearing off
    c. smooth the shaft
    d. grease the shaft
    e. place on new bearing
3. Determine if the bearing is to be removed using a hammer and proper driver.
    a. place a tube over the shaft to drive the bearing from the shaft
    b. Make sure the shaft has no obstructions
    c. strike the welded lugs on the side of the tube with a hammer
    d. remove old bearing
    e. smooth the shaft
    f. grease the shaft
    g. place new bearing on the shaft
4. Determine if the bearing is to be removed using mechanical or hydraulic presses.
    a. make sure that the inner race is supported so that the outer race is not stress loaded
    b. press bearing from the housing
    c. grease the shaft
    d. place on the new bearing
5. Determine if the bearing to be replaced is corroded.
    a. cut off old bearing
    b. smooth the shaft
    c. grease the shaft
    d. place on new bearing
6. Test operation
    a. operation is free and smooth
    b. parts are aligned properly

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TASK ANALYSIS

DOMAIN: REPLACE WORN BEARINGS

I. Task Statement: Replace Worn Bearings.

II. Task Performance Cue(s): Employer has asked you to replace worn bearings.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.

B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Is the bearing to be replaced corroded?	2	7		
2. Take oxy-adetylene torch and cut off old bearing.			3	
3. Use emery cloth and smooth the shaft.			4	
4. Grease the shaft thoroughly.			5	
5. Place on new bearings.			6	
6. Replace other equipment on shaft.			EOT	
7. Clean the bearing housing and shaft.			8	
8. Consult the technical manual or service manual for removal procedure if possible.			9	
9. Is the bearing to be removed using mechanical or hydraulic puller?	13	10		
10. Is the bearing to be removed using mechanical or hydraulic presses?	18	11		
11. Is the bearing to be removed using a hammer and proper driver?	20	12		
12. Consult with employer or service personnel if you cannot determine method of bearing removal.				
13. Place pullers in position placing pullers over the bearing.			14	
14. Screw the pullers so they tighten and pull the bearings off.			15	

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
15. Use emery cloth and smooth the shaft, if needed.			16	
16. Grease shaft.			17	
17. Place on new bearing.				
18. Be sure that the inner race is supported so that the outer race is not distress loaded.			20	
19. Press the bearing from the housing.			15	
20. Place a tube over the shaft to drive bearing from the shaft.			24	
21. If the shaft has obstructions, the tube may be split and fastened to the shaft.			25	
22. Strike the welded lugs on the side of the tube with the hammer and punch.			26	
23. Remove the old bearing.			15	
24. Follow suggested removal procedure.			15	
25. Does bearing work properly?	EOT	26		
26. Correct adjustments or defects.			25	

DOMAIN: REPLACE WORN BEARINGS

TASK : Replace Worn Bearings

Generalizable to all Tasks in the Replace Worn Bearings Domain	Generalizable to the Replace Worn Bearings Task	Transferrable to all Tasks in the Replace Worn Bearings Domain	Transferrable to the Repla Worn Bearings Task
ST #1		ST #1	
Removing Bearings		Removing Bearings	
Learning Content:		Learning Content:	
1. Rules for removing bearings with a torch.		1. Read operators manual.	
2. Rules for removing bearings with mechanical or hydraulic pullers.		2. Inspect bearing for wear.	
3. Rules for removing bearings with mechanical or hydraulic presses.		3. Inspect shaft for obstructions.	
4. Rules for removing bearings with a hammer and proper tube.		4. Use method of removal appropriate to this case.	
		5. Consult employer or service personnel if removal method can't be determined.	
ST #2		ST #2	
Replacing New Bearings		Replacing New Bearings	
Learning Content:		Learning Content:	
1. Rules for smoothing the shaft		1. Smooth shaft with emery cloth and clean.	
2. Rules for greasing the shaft		2. Grease shaft thoroughly.	
3. Rules for replacing new bearings		3. Put on new bearing.	
		4. Replace all parts removed during servicing.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: REPLACE WORN BEARINGS

Section I. Remove Bearings

A. Methods of Removal

1. Use of a cutting torch
2. Use of mechanical or hydraulic pullers
3. Use of mechanical or hydraulic presses
4. Use of a hammer and driver
    a. solid tube drivers
    b. split tube drivers

Section II. Replacing New Bearings

A. Methods of Replacement

1. Pressing
2. Driving

B. Replacing Parts Removed to Expose Bearing

PLANNING FORMAT

DRT 1.1 and 1.2

DOMAIN: REPLACE WORN BEARINGS

Subtask: Remove and Replace Bearings

Replacing Worn Bearings Content Limits:

See Data Sheet B, Sections I & II.

Subtask Variable Content Limits:

See Data Sheet C, Sections I & II.

Test Stimulus Characteristics:

The student will be provided the following data, material, and supplies:

1. Equipment to work on
2. Oxy - acetylene torch
3. Mechanical or hydraulic pullers and presses
4. Technical or service manual
5. Appropriate tools and equipment for procedure.

Test Response Characteristics:

The student will demonstrate an understanding of the concepts, principles, and practices involved in:

1. Using the service manual
2. Manipulative skills of using hand tools
3. Using an oxy - acetylene torch
4. Proper removal and replacement of bearing.

EXAMINEE INSTRUCTIONS

DRT 1.1 and 1.2

DOMAIN: REPLACE WORN BEARINGS

For this test you will be required to perform the following:

1. Identify worn bearing
2. Proper removal of worn bearing
3. Correct preparation of bearing shaft before replacement
4. Replacement of bearing
5. Replacement of other equipment on shaft.

PERFORMANCE CHECKLIST

DRT 1.1, 1.2, and 1.3

DOMAIN: REPLACE WORN BEARINGS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Read owners manual for proper procedure.
		2. Removed proper parts to expose shaft and bearing.
		3. Selected proper process.
		4. Removed worn bearings.
		5. Smoothed shaft if needed
		6. Greased shaft.
		7. Reinstalled new bearings.
		8. Replaced other parts.
		9. Checked bearing operation.

A* = Acceptable
U = Unacceptable

DOMAIN: REPLACE UNIVERSAL JOINTS

TASK: Replace Universal Joints

PERFORMANCE OBJECTIVE

Given a vehicle requiring replacement of the universal joints, replacement universal joints, "D" ring pliers, floor jack and safety stands, an arbor press or machinst vice, ½" drive socket set, a set of open box end wrenches, grease gun, grease, a plastic hammer, and a service manual, replace the universal joints following the manufacturer's recommended procedures and specifications. Upon completion, the drive shaft will function without excessive noise, vibration, and the universal joints will not leak.

PERFORMANCE GUIDE

1. Raise the vehicle to allow access to the drive shaft.
2. Remove the drive shaft from equipment.
3. Remove the U-joint clips or locking device.
4. Remove the U-joint.
5. Before installing a new joint, check to determine if it has ample lubrication.
6. Install the new U-joint.
7. Install clips or locking devices being sure that they are properly located and seated.
8. Reinstall the drive shaft in the vehicle.
9. Road test to check performance.

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TASK ANALYSIS

DOMAIN: REPLACE UNIVERSAL JOINTS

I. Task Statement: Replace Universal Joints.

II. Task Performance Cue(s): Employer asks you to replace universal joints.

III. Task Performance Procedures:

A. When a decision must be made, indicate alternatives as "Yes-No" answers to questions.
B. List performance steps by most frequently occurring sequence.

TASK ELEMENTS	Decisions		Go To Step	Tools, References, Work Aids
	Yes	No		
1. Does the universal joint need replacing?	2	EOT		
2. Raise vehicle to allow access to the drive shaft.			3	
3. Remove drive shaft from equipment.			4	
4. Remove U-joint clips or locking device.			5	
5. Remove the U-joint.			6	
6. Is there ample lubrication?	8	7		
7. Apply ample lubrication.			8	
8. Install new U-joint.			9	
9. Reinstall clips or locking devices and seat properly.			10	
10. Reinstall the drive shaft.			11	
11. Road test to check performance.			EOT	

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DOMAIN: REPLACE UNIVERSAL JOINTS

TASK: Replace Universal Joints

Generalizable to all Tasks in the Replace Universal Joints Domain	Generalizable to the Replace Universal Joints Task	Transferrable to all Tasks in the Replace Universal Domain	Transferrable to the Replace Universal Joints Task
ST #1		ST #1	
Replacing Universal Joints		Replacing Universal Joints	
Learning Content:		Learning Content:	
1. Rules for removing universal joints.		1. Raise vehicle to allow access to the drive shaft.	
2. Rules for replacing universal joints.		2. Remove drive shaft from equipment.	
		3. Remove U-joint clips or locking device.	
		4. Remove U-joint.	
		5. Apply ample lubrication.	
		6. Install new U-joint.	
		7. Reinstall clips or locking devices and seat properly.	
		8. Reinstall the drive shaft.	
		9. Road test to check performance.	

DATA SHEET B

CONTENT LIMITS

DOMAIN: REPLACE UNIVERSAL JOINTS

Section I. Replacing Universal Joints

A. Height of Cap and Spindle

B. Diameter of Cap and Spindle

C. Size of Bearings

D. Type and Size of Seals

E. Clips or Locking Device

PLANNING FORMAT

DRT 1.1

DOMAIN: REPLACE UNIVERSAL JOINTS

Subtask: Replacing Universal Joints

Content Limits

See Data Sheet B, Section I.

Test Stimulus Characteristics

The student will be provided the following data, material and supplies:

1. Vehicle with worn universal joints
2. New universal joints for vehicles being used
3. Service manual
4. Necessary tools and equipment.

Test Response Characteristics

The student will demonstrate an understanding of the concepts, principles and practices involved in:

1. Properly removing worn universal joints
2. Choosing the right universal joints for vehicle being used
3. Proper use of tools
4. Preparation of new universal joints
5. Replacing universal joints properly
6. Checking operation of vehicle upon completion.

EXAMINEE INSTRUCTIONS

DRT 1.1

DOMAIN: REPLACE UNIVERSAL JOINTS

For this test you will be required to perform the following:

1. Remove old universal joints
2. Select proper replacement joints
3. Preparation of new universal joints for installation
4. Replacing universal joints
5. Check operation of vehicle after job is completed.

PERFORMANCE CHECKLIST

DRT 1.1

DOMAIN: REPLACE UNIVERSAL JOINTS

A*	U	EVALUATIVE STATEMENT AND CRITERIA
		1. Properly cleaned area on drive shaft.
		2. Tightened new grease fittings.
		3. Lubricated new universal joints.
		4. Secured locking device on drive shaft.
		5. Tested vehicle for proper operation.

A* = Acceptable
U = Unacceptable